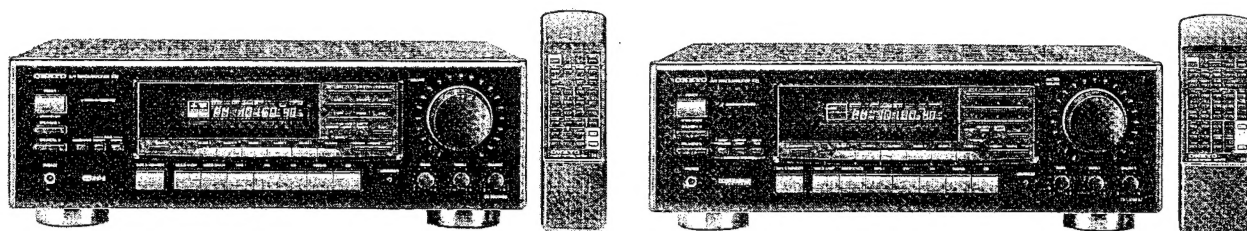


# ONKYO SERVICE MANUAL

## QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-9022RDS MODEL TX-SV9030



### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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**ONKYO**  
**AUDIO COMPONENTS**

# SPECIFICATIONS

## AMPLIFIER SECTION

### TX-9022RDS

**Power Output:** USA & Canadian models:  
100 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40 Hz to 20 kHz with no more than 0.2% THD.  
Other than USA & Canadian models:  
Continuous output  
2 x 100 watts at 4 ohms 1 kHz (DIN)  
2 x 75 watts at 8 ohms 1 kHz (DIN)

**Total Harmonic Distortion:** 0.08% at power 30 watts  
**IM Distortion:** 0.08% at power 30 watts  
**Damping Factor:** 50 at 8 ohms  
**Sensitivity and Impedance:** Phono: 2.5 mV/50 kohms  
CD/Tape Play: 150 mV/50 kohms  
Tape Rec: 150 mV/2.2 kohms  
**Phono Overload:** 120 mV RMS. at 1,000 Hz, 0.5% THD.  
**Frequency Response:** 20 to 30,000 Hz, +/-1 dB  
**RIAA Deviation:** 20 to 20,000 Hz, +/-0.8 dB  
**Tone Control:** BASS: +/-10 dB at 100 Hz  
TREBLE: +/-10 dB at 10,000 Hz  
**Signal to Noise Ratio:** PHONO: 80 dB (IHF A, 5 mV input)  
CD/TAPE: 100 dB (IHF A)

## VIDEO SECTION

**Signal sensitivity and impedance:** VDP/VCR input, output: 1 Vp-p, 75 ohms

## TUNER SECTION

### FM:

**Tuning Range:** 87.5 — 108.0 MHz  
**Usable Sensitivity:** Mono: 11.2 dBf, 1.0 µV (75 ohms)  
Stereo: 17.2 dBf, 2.0 µV (75 ohms)  
**50dB Quieting Sensitivity:** Mono: 18.2 dBf, 2.2 µV (75 ohms)  
Stereo: 38.2 dBf, 22 µV (75 ohms)  
**Capture Ratio:** 1.5 dB  
**Image Rejection Ratio:** USA & Canadian models: 40 dB  
Other area models: 85 dB  
**IF Rejection Ratio:** 90 dB  
**Signal-to-Noise Ratio:** Mono: 73 dB  
Stereo: 67 dB  
**Alternate Channel Attenuation:** 55 dB  
**Selectivity:** 50 dB (DIN)  
**AM Suppression Ratio:** 50 dB  
**Total Harmonic Distortion:** Mono: 0.15%  
Stereo: 0.25%  
**Frequency Response:** 30 — 15,000 Hz +/-1.5 dB  
**Stereo Separation:** 45 dB at 1 kHz/30 dB at 100 — 10,000 Hz

### AM:

**Tuning Range:** USA & Canadian models: 530 — 1710 kHz (10 kHz steps)  
European models: 522 — 1611 kHz (9kHz steps)  
Worldwide models: 531 — 1602 kHz (9 kHz steps),  
530 — 1710 kHz (10 kHz steps)  
**Usable Sensitivity:** 30 µV  
**Image Rejection Ratio:** 40 dB  
**IF Rejection Ratio:** 40 dB  
**Signal-to-Noise Ratio:** 40 dB  
**Total Harmonic Distortion:** 0.7%

## GENERAL

**Power Supply:** European models: AC 230V, 50 Hz  
**Dimensions (W x H x D):** 455 x 150 x 331 mm  
17-15/16" x 5-7/8" x 13-1/16"  
**Weight:** 9.5 kg (20.9 lbs)

### TX-SV9030

#### Stereo mode

**Front L/R channels**  
60 watts per channel min. RMS. at 8 ohms, both channels driven, from 20 Hz to 20,000 Hz, with no more than 0.08% total harmonic distortion.  
**Continuous Power output:** 2 x 90 watts 4 ohms 1 kHz (DIN)  
2 x 70 watts 8 ohms 1 kHz (DIN)

#### Surround mode

**Front L/R and center channels**  
50 watts per channel min. RMS at 8 ohms, with no more than 0.08% total harmonic distortion at 1,000 Hz  
**Rear channels**  
15 watts per channel min. RMS at 8 ohms with no more than 0.3% total harmonic distortion at 1,000 Hz  
0.08% at rated power (FRONT)  
0.08% at rated power (FRONT)  
50 at 8 ohms (FRONT)  
**Phono:** 2.5 mV/50 kohms  
**CD/Tape Play:** 150 mV/50 kohms  
**Tape Rec:** 150 mV/2.2 kohms  
**Mono out (SUBWOOFER):** 1V 2.2 kohms  
120 mV RMS. at 1,000 Hz, 0.5% THD.  
20 to 30,000 Hz, +/-1 dB  
20 to 20,000 Hz, +/-0.8 dB  
**BASS:** +/-10 dB at 100 Hz  
**TREBLE:** +/-10 dB at 10,000 Hz  
**PHONO:** 80 dB (IHF A, 5 mV input)  
**CD/TAPE:** 100 dB (IHF A)

VDP/VCR input, output: 1 Vp-p, 75 ohms

**87.5 — 108.0 MHz**  
**Mono:** 11.2 dBf, 1.0 µV (75 ohms)  
**Stereo:** 17.2 dBf, 2.0 µV (75 ohms)  
**Mono:** 18.2 dBf, 2.2 µV (75 ohms)  
**Stereo:** 38.2 dBf, 22 µV (75 ohms)  
**1.5 dB**  
**USA & Canadian models:** 40dB  
**Other area models:** 85 dB  
**90 dB**  
**Mono:** 73 dB  
**Stereo:** 67 dB  
**55 dB**  
**50 dB (DIN)**  
**50 dB**  
**Mono:** 0.15%  
**Stereo:** 0.25%  
**30 — 15,000 Hz +/-1.5 dB**  
**45 dB at 1 kHz/30 dB at 100 — 10,000 Hz**

**USA & Canadian models:** 530 — 1710 kHz (10 kHz steps)  
**European models:** 522 — 1611 kHz (9kHz steps)  
**Worldwide models** 531 — 1602 kHz (9 kHz steps),  
530 — 1710 kHz (10 kHz steps)  
**30 µV**  
**40 dB**  
**40 dB**  
**40 dB**  
**40 dB**  
**0.7%**

**European models:** AC 230V, 50 Hz  
**455 x 150 x 331 mm**  
**17-15/16" x 5-7/8" x 13-1/16"**  
**10.2 kg (22.5 lbs)**

**Remote control transmitter RC-223S**

Transmitter: Infrared  
 Signal range: Approx. 5 meters (16ft. X 4" )  
 Power supply: Two "AA" batteries(1.5V X 2)

Specifications and features are subject to change without notice.

## SERVICE PROCEDURES

### 1.Replacing the fuses



This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating, refer to the marking adjacent to the symbol.



Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

Circuit No.	Part No.	Descriptions	Remarks
F902	252076	3.15A-SE-EAK,Primary	
F903	252075	2.5A-SE-EAK,AC outlet	
F921,F922	252079	6.3A-SE-EAK,SEcondary	TX-SV9030 only

### 3.Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

### 2.Changing the band step

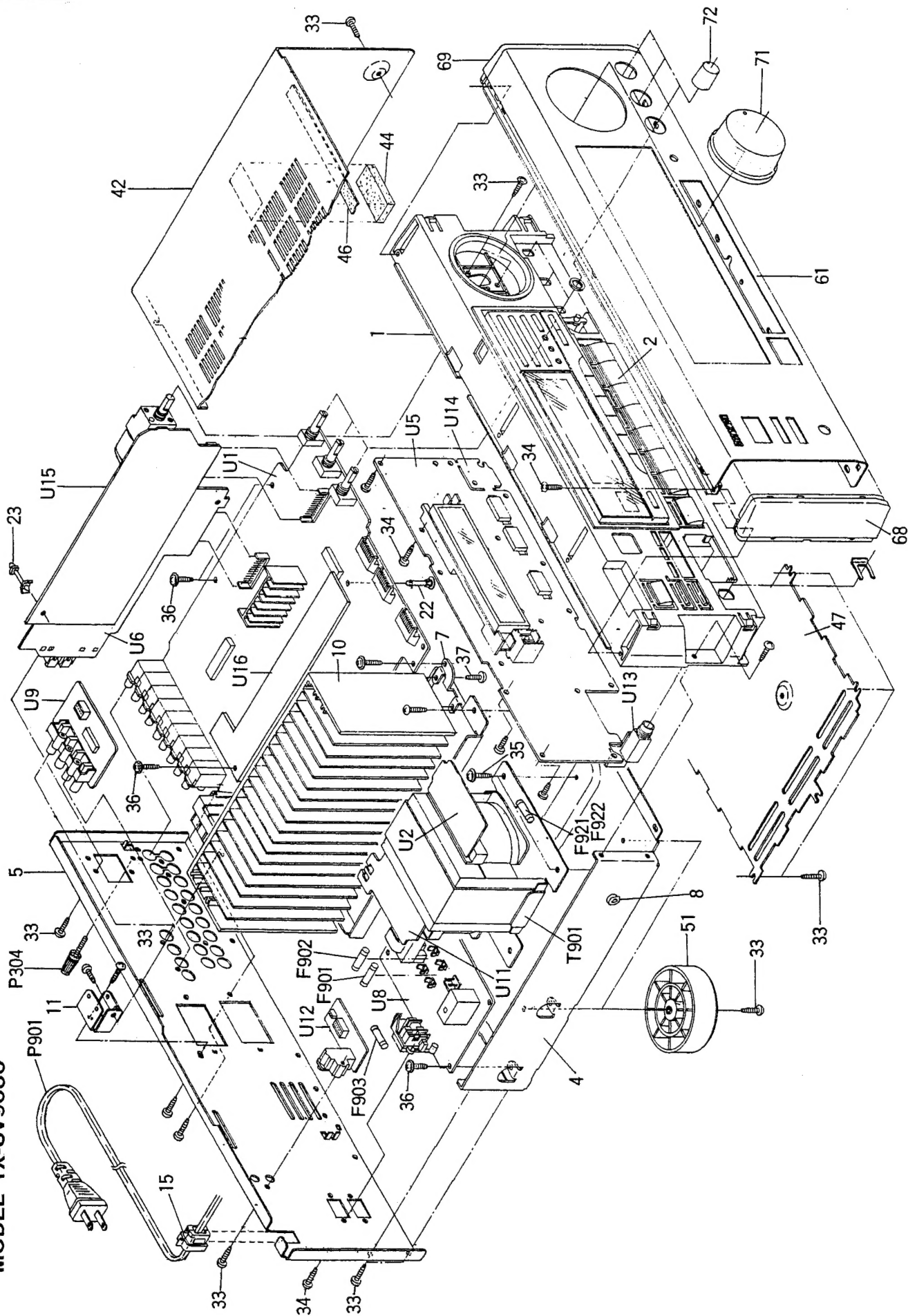
With the exception of the models below, a BAND STEP selector switch is not provided.

<AM>

MODEL	BAND STEP	R727
MD	10kHz to 9kHz	47 k $\Omega$
MP	9kHz to 10kHz	22 k $\Omega$

EXPLODED VIEW

MODEL TX-SV9030





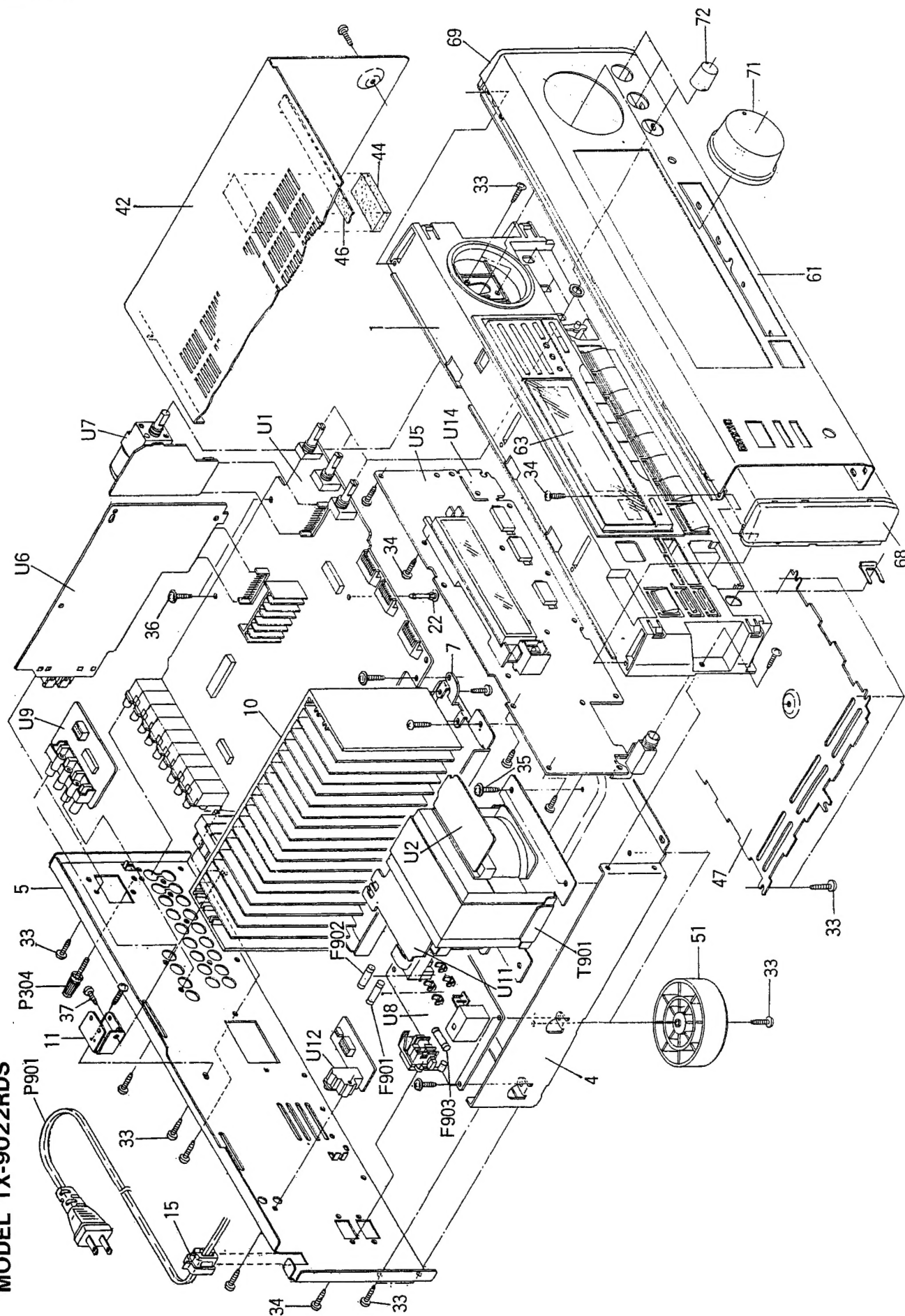
## PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110794Y	Front bracket	Q523	Q524	2SA1695-O,
2	28324929AY	Knob CLA			2SA1695-Y,
3	28175209Y	Isolating plate			2SA1695-P,
4	27100278AY	Chassis			2SA1265N-R or
5	27121827AY	Rear panel	Q821	2202283	2SA1265N-O,Transistors
7	27130727Y	Bracket H		2202253,	2SC4467-O,
8	27270212Y	Spacer		2202254,	2SC4467-Y,
10	27160330AY	Radiator		2202256,	2SC4467-P,
11	27141623Y	Retainer H		2202502 or	2SC3181N-R or
13	27141530AY	Retainer HS-2		2202503	2SC3181N-O,Transistors
15	27300750	Bushing cord	Q822	2202373,	2SC4466-O,
22	27190524	KGLS-14RF,Holder		2202374,	2SC4466-Y,
23	27190062	KGLS-12S,Holder		2202375,	2SC4466-P,
32	801433	3SMS8W,SW+14B(BC),Special screw		2202352 or	2SC3180N-R or
33	834430088	3TTS+8B(BC),Self-tapping screw	Q823	2202353	2SC3180N-O,Transistors
34	833430080	3TTP+8P(BC),Self-tapping screw		2202243,	2SA1694-O,
35	830440089	4TTC+8B(BC),Self-tapping screw		2202244,	2SA1694-Y,
36	831130088	3TTW+8B,Self-tapping screw		2202246,	2SA1694-P,
37	834430108	3TTS+10B(BC),Self-tapping screw		2202492 or	2SA1264N-R or
39	82143006	3P+6FN(BC),Pan head screw	Q824	2202493	2SA1264N-O,Transistors
42	28184476BY	Top cover		2202363,	2SA1693-O,
44	28140265	Cushion		2202364,	2SA1693-Y,
46	28140546	Cushion		2202365,	2SA1693-P,
47	27170302Y	Bottom panel		2202342 or	2SA1263N-R or
51	27175251AY	Leg		2202343	2SA1263N-O,Transistors
61	1A473121Y	Front panel ass'y	T901	2300984Y	NPT-1196P,Power transformer
62	8910301	CS-3, Ring CS	U1	1A472592-1AY	NAAR-4892-1A,Main circuit pc board ass'y
63	28191673Y	Clear plate	U2	1A472593-1AY	NAETC-4893-1A,Power supply circuit pc board ass'y
64	28198782Y	Facet	U5	1A472597-1AY	NADIS-4897-1A,Display circuit pc board ass'y
67	28135199	Badge	U6	1A472598-1AY	NARF-4898-1A,Tuner circuit pc board ass'y
68	28125255A	End cap L	U8	1A472500-1AY	NAPS-4900-1A,Power supply circuit pc board ass'y
69	28125256A	End cap R	U9	1A472501-1Y	NAETC-4901-1,Video circuit pc board ass'y
71	28324933A	Knob VOLUME	U11	1A472503-1Y	NAETC-4903-1,Primary circuit pc board ass'y
72	28324845B	Knob LEVEL	U12	1A472504-1Y	NAETC-4904-1,RI terminal pc board ass'y
F902	252076	3.15A-SE-EAK,Fuse	U13	1A472505-1Y	NAETC-4905-1,Headphone terminal pc board ass'y
F903	252075	2.5A-SE-EAK,Fuse	U14	1A472506-1Y	NASW-4906-1,Loudness switch pc board ass'y
F921,F922	252079	6.3A-SE-EAK,Fuse	U15	1A472508-1Y	NAAF-4908-1,Surround circuit pc board ass'y
P304	25060044	Terminal	U16	1A472509-1AY	NAAF-4909-1A,Center and rear amplifier pc board ass'y
P901	253193HIT	AS-CEE,Power supply cord			
Q521,Q522	2202523,	2SC4468-O,			
	2202524,	2SC4468-Y,			
	2202526,	2SC4468-P,			
	2202292 or	2SC3182N-R or			
	2202293	2SC3182N-O,Transistors			






NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.


# EXPLODED VIEW

MODEL TX-9022RDS



## PARTS LIST

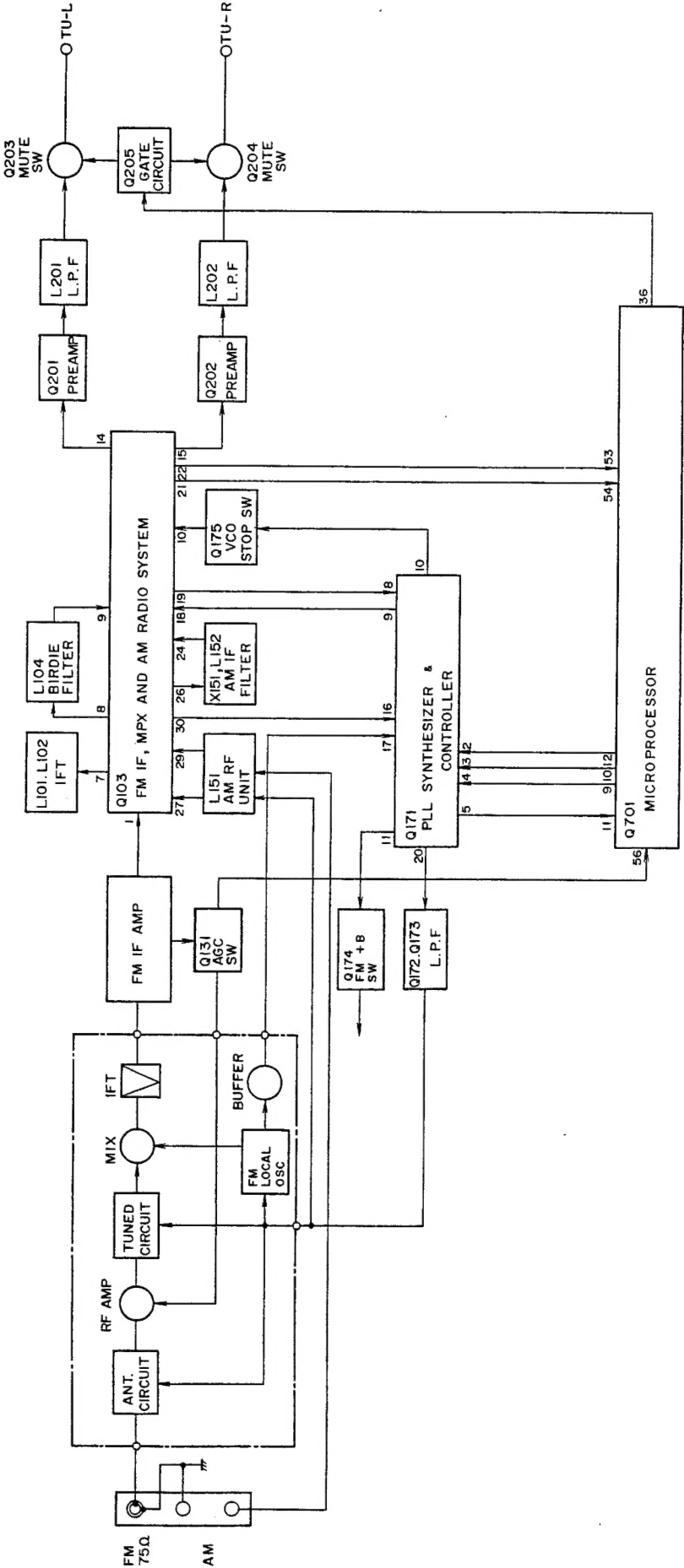
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27110795Y	Front bracket	P304	25060044	Terminal
2	28324929Y	Knob CLA	P901	253172 or 	AS-CEE-2,
3	28175209Y	Isolating plate		253092-1A	Power supply cord
4	27100278AY	Chassis	Q521,Q522	2201653,	2SC3856-O,
5	27121839AY	Rear panel		2201654 or	2SC3856-Y or
7	27130727Y	Bracket H		2201655	2SC3856-P,Transistors
8	27270212Y	Spacer	Q523,Q524	2201663,	2SA1492-O,
10	27160330AY	Radiator		2201664 or	2SA1492-Y or
11	27141623Y	Retainer H		2201665	2SA1492-P,Transistors
15	27300750	 Bushing cord	T901	2300976Y 	NPT-1194P,Power transformer
22	27190524	KGLS-14RF,Holder	U1	1A468592-3AY	NAAR-4892-3A,Main circuit pc board ass'y
32	801433	3SMS8W,SW+14B(BC),Special screw	U2	1A468593-3AY	NAETC-4893-3A,Power supply circuit pc board ass'y
33	834430088	3TTS+8B(BC),Self-tapping screw	U5	1A476597-3CY	NADIS-4897-3C,Display circuit pc board ass'y
34	833430080	3TTP+8P(BC),Self-tapping screw	U6	1A476598-3CY	NARF-4898-3C,Tuner circuit pc board ass'y
35	830440089	4TTC+8B(BC),Self-tapping screw	U7	1A468599-3Y	NAAF-4899-3,Volume circuit pc board ass'y
36	831130088	3TTW+8B,Self-tapping screw	U8	1A468500-3AY	NAPS-4900-3A,Power supply circuit pc board ass'y
37	834430108	3TTS+10B(BC),Self-tapping screw	U9	1A468501-3Y	NAETC-4901-3,Video circuit pc board ass'y
42	28184476BY	Top cover	U11	1A468503-3Y	NAETC-4903-3,Primary circuit pc board ass'y
44	28140265	Cushion	U12	1A468504-3BY	NAETC-4904-3B,R1 terminal pc board ass'y
46	28140546	Cushion	U13	1A468505-3Y	NAETC-4905-3,Headphone terminal pc board ass'y
47	27170302Y	Bottom panel	U14	1A468506-3Y	NASW-4906-3,Loudness switch pc board ass'y
51	27175251AY	Leg			
61	1A477121Y	Front panel ass'y			
62	8910301	CS-3,Ring CS			
63	28191673Y	Clear plate			
64	28198782Y	Facet			
67	28135199	Badge			
68	28125255A	End cap L			
69	28125256A	End cap R			
71	28324932B	Knob VOLUME			
72	28324845B	Knob LEVEL			
F902	252076	 3.15A-SE-EAK,Fuse			
F903	252075	 2.5A-SE-EAK,Fuse			

NOTE: THE COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

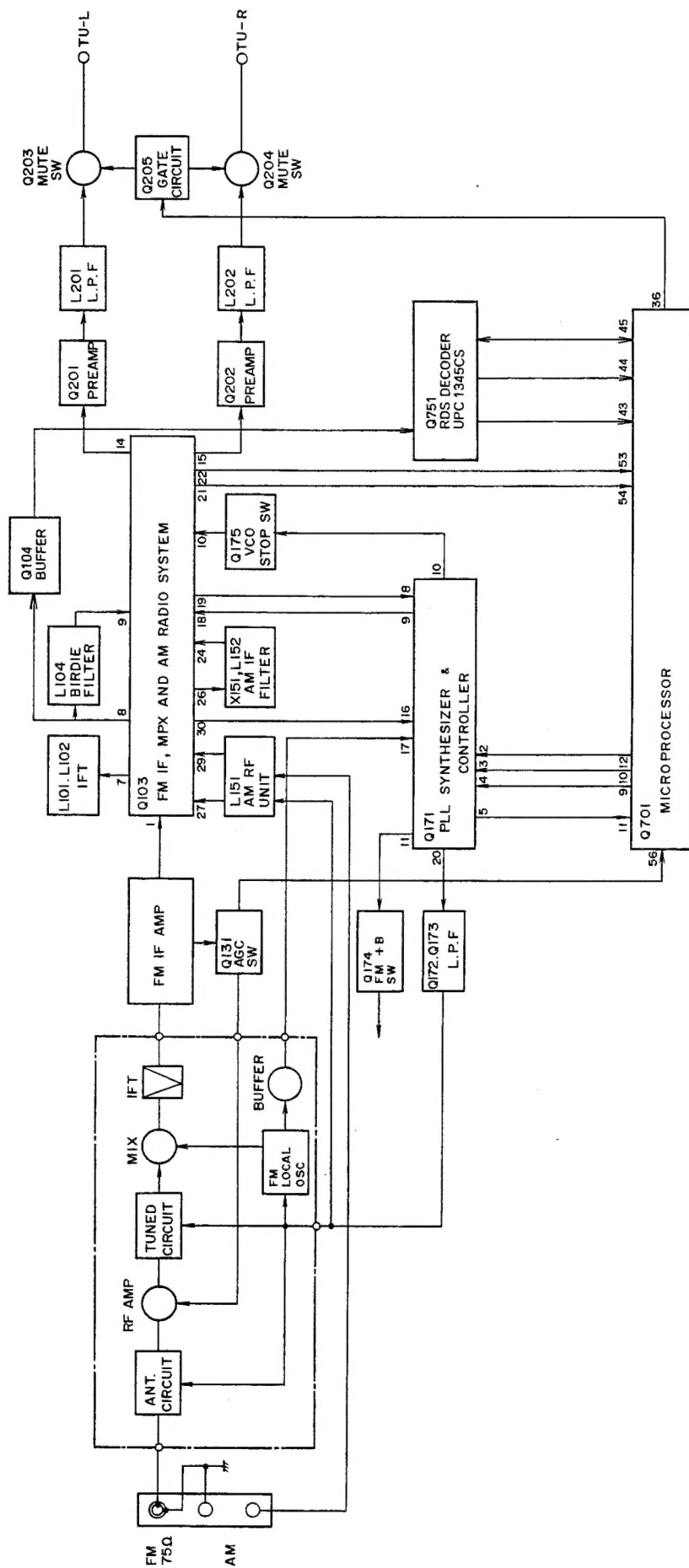
# BLOCK DIAGRAM

## TUNER SECTION

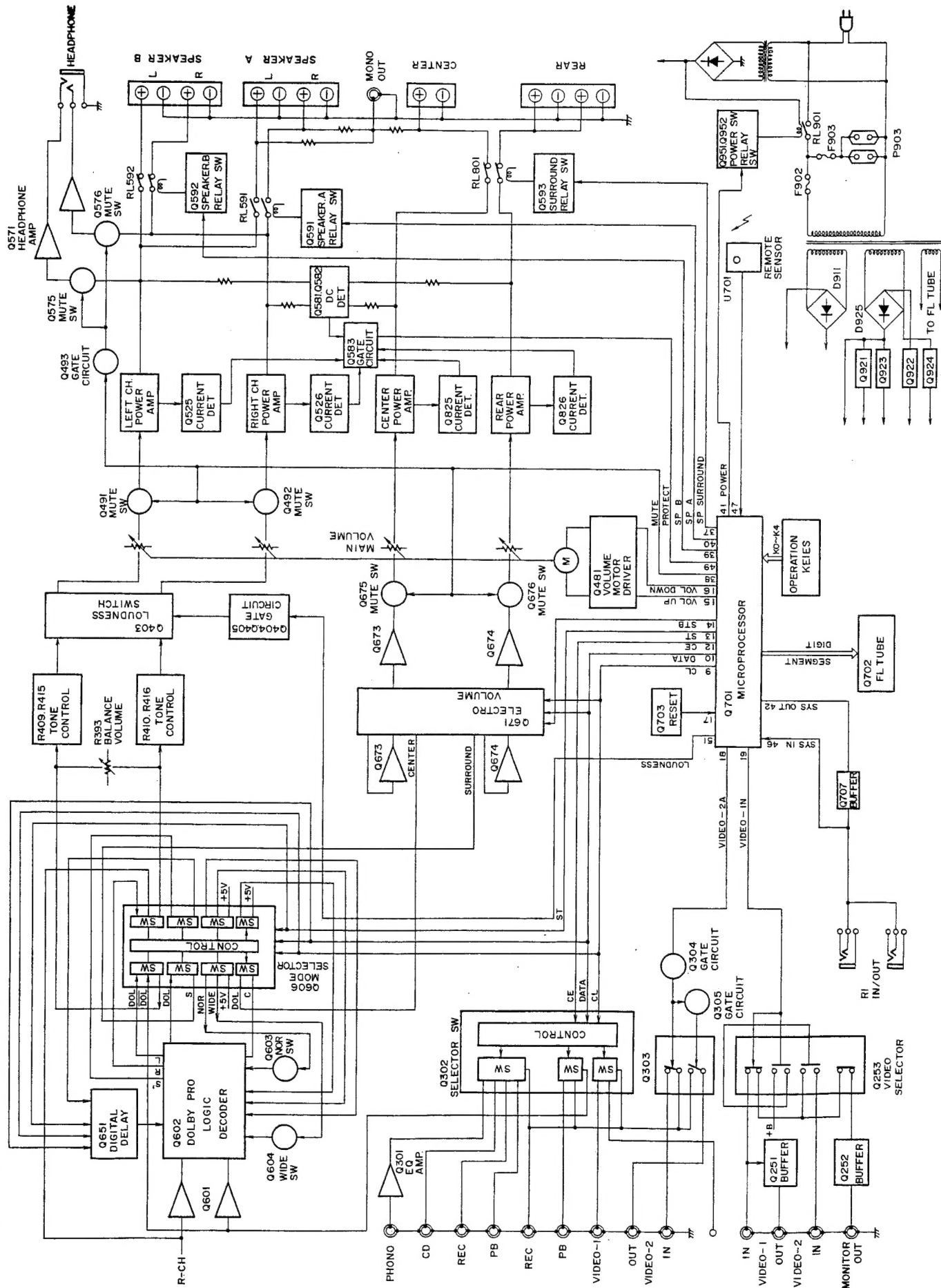
### TX-SV9030



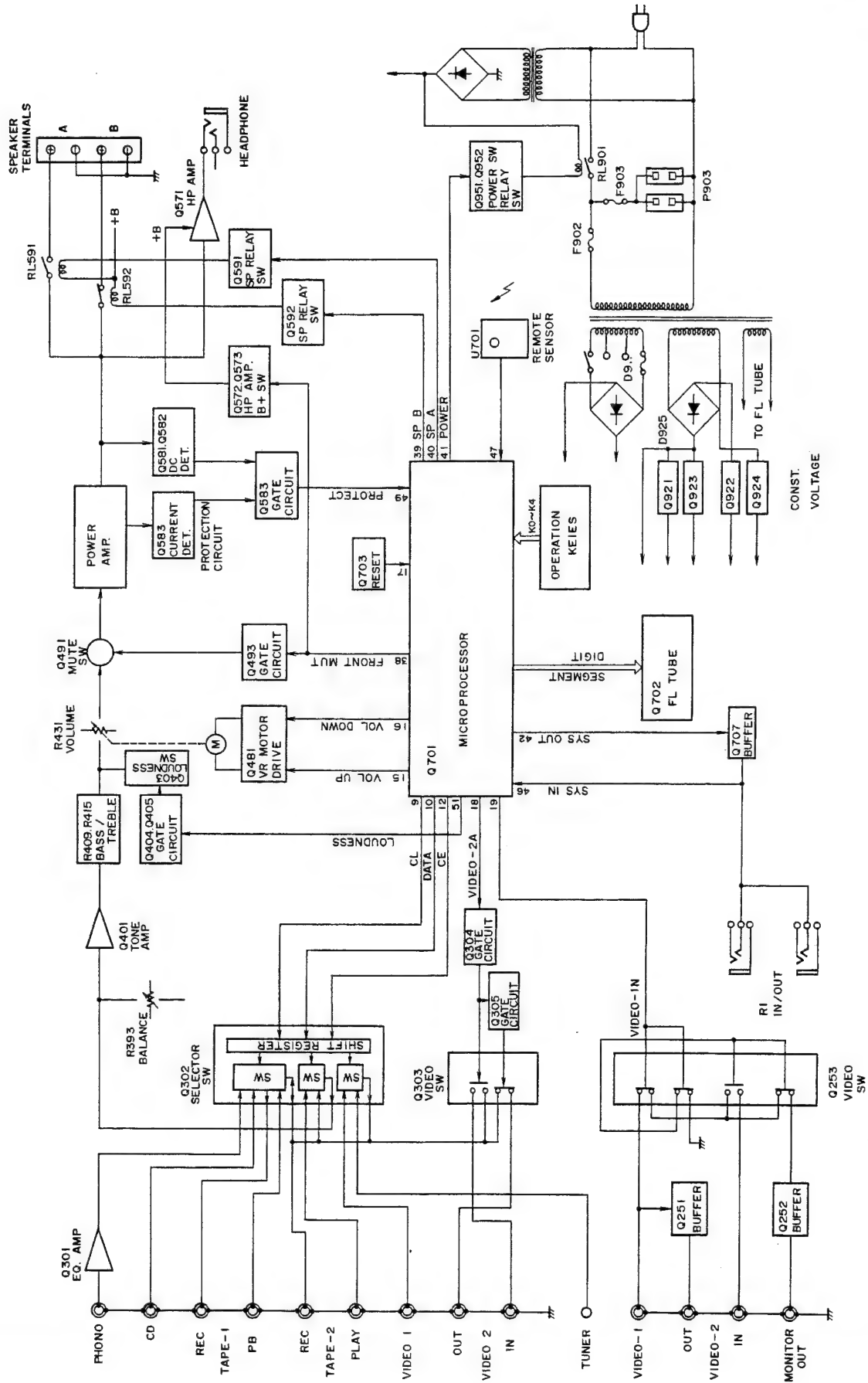
## TX-9022RDS



## BLOCK DIAGRAM AMPLIFIER SECTION MODEL TX-SV9030

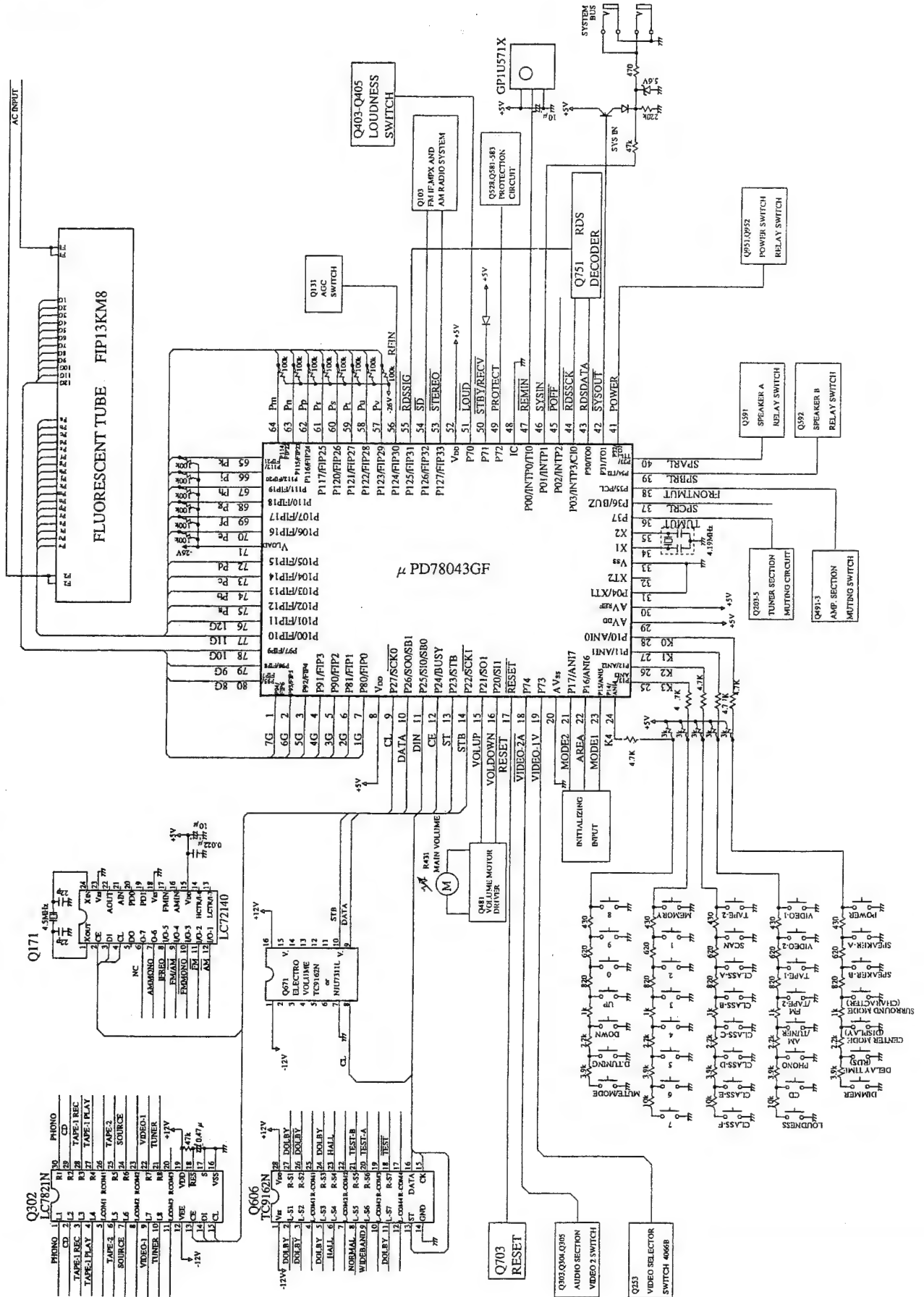


TX-9022RDS





# MICROPROCESSOR CONNECTION DIAGRAM



# TERMINAL DESCRIPTION

Pin No.	Function	Description
1~7	7G~1G	Grid output terminals Active"H"
8	VDD	Positive power supply terminal (+5V)
9	CL	Output terminal for CL-terminal of LC7821N, CK-terminal of TC9162N, CL-terminal of LC72140, CK-terminal of TC9213P and SK-terminal of M65830P
10	DATA	Output terminal for DI-terminal of LC7821N, DATA-terminal of TC9162N, DI-terminal of LC72140, DATA-terminal of TC9213P and DATA-terminal of M65830P
11	DIN	Input terminal for DO-terminal of LC72140
12	CE	Output terminal for CE-terminal of LC7821N and LC72140
13	STB	Output terminal for ST-terminal of TC9162N, STB-terminal of TC9213P and REQ-terminal of M65830P.
14	RDSSCK	Input terminal for CLK OUT-terminal of RDS decoder $\mu$ PC1346CS
15	VOLUP	Volume control output terminal
16	VOLDOWN	Refer to table 1
17	RESET	Input terminal for System Reset
18	VIDEO-2A	Output terminal for changing Audio Signal of VIDEO-2
19	VIDEO-1V	Output terminal for changing Visual Signal of VIDEO-1
20	AVSS	Grand terminal for A/D converter
21	MODE2	Initial setting Input terminal for changing AM stereo function
22	AREA	Initial setting(BAND0,BAND1,AM10K) input terminal for changing frequency range
23	MODE	Initial setting input terminal for surround function
24	K4	Key input terminal.
25	K3	Key input terminal.
26	K2	Key input terminal.
27	K1	Key input terminal.
28	K0	Key input terminal.
29	AVDD	Analog positive power terminal (+5V) for A/D converter
30	AVREF	Reference voltage input terminal for A/D converter
31	XT1	Crystal connection terminal for resonator of sub system clock
32	XT2	Not used.
33	VSS	Ground Terminal
34	X1	Connect the ceramic resonator 4.19MHz.
35	X2	Resonator connection terminal for resonator of main system clock
36	TUMUT	Muting output terminal for tuner
37	SURMUT	Muting output terminal for center and rear amplifiers
38	FRONTMUT	Muting output terminal for front amplifier
39	SPBRL	Control output terminal for speaker relay B

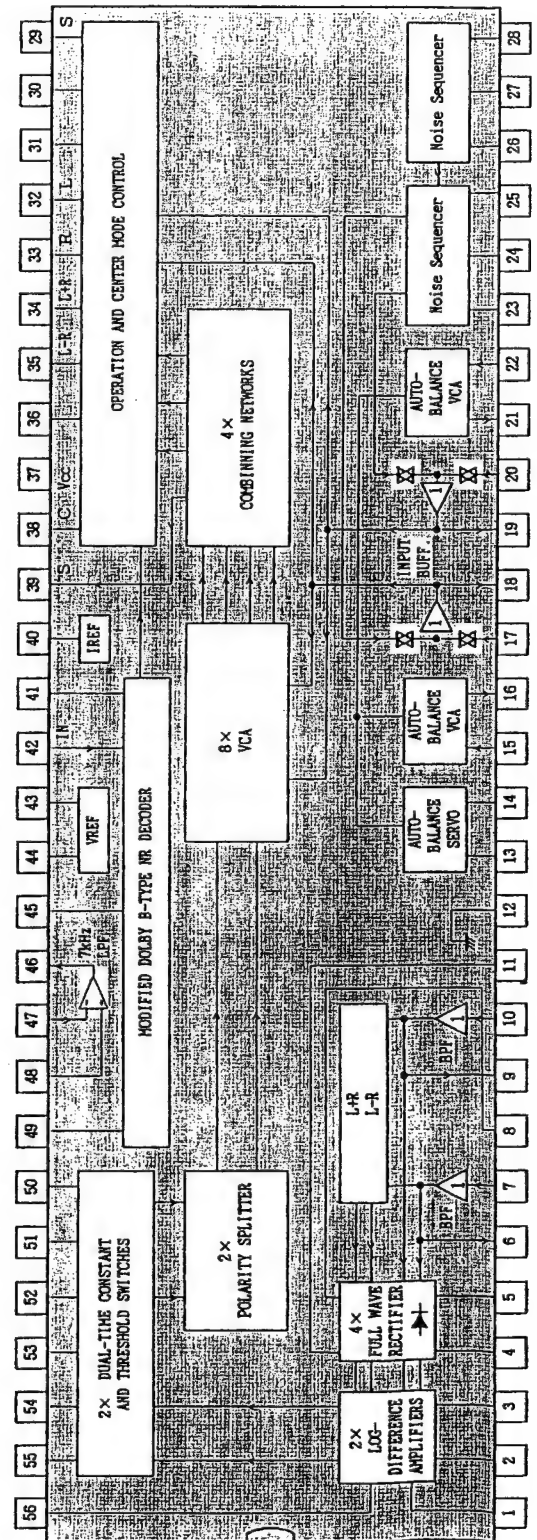
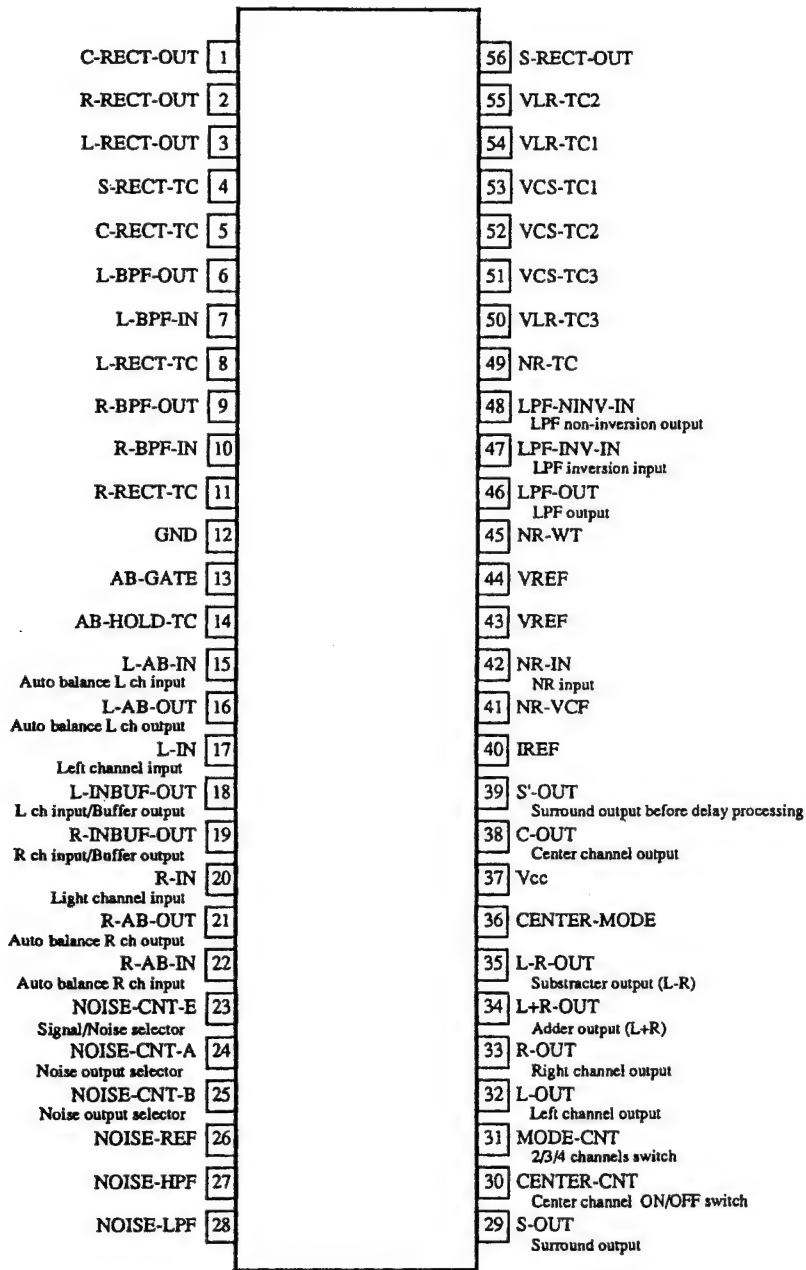
Pin No.	Function	Description
40	SPARL	Control output terminal for speaker relay A
41	POWER	Power source control output terminal
42	SYSOUT	System code output terminal
43	RDSDATA	Input terminal for DATA OUT-terminal of $\mu$ PC1346CS
44	RDSSCK	Input terminal for SK-terminal of $\mu$ PC1346CS
45	POFF	Detection input terminal for power failure
46	SYSIN	System code input terminal
47	REMIN	Input terminal for signal of remote control
48	IC	Internal connection terminal
49	PROTECT	Detection input terminal for movement of protection circuit
50	STBY/RECV	STAND-BY and RECEIVED indication output terminal
51	LOUD	Control output terminal for Loudness switch
52	VDD	Positive power supply terminal (+5V)
53	STEREO	Detection input terminal for stereo broadcasting
54	SD	Detection input terminal for radio station
55	RDSSIG	Detection input terminal for RDS broadcasting
56	REIN	RF MODE input terminal
57~70	Pv~Pe	Segment output terminals Active"H"
71	VLOAD	Pull-down resistor connection terminal for control and driver of FIP
72~75	Pd~Pa	Segment output terminals Active"H"
76~80	12G~8G	Grid output terminals Active"H"

Movement	Outputs	
	VOLUP(#15)	VOLDOWN(#16)
Stop	H	H
UP	H	L
DOWN	L	H
POWER OFF	L	L

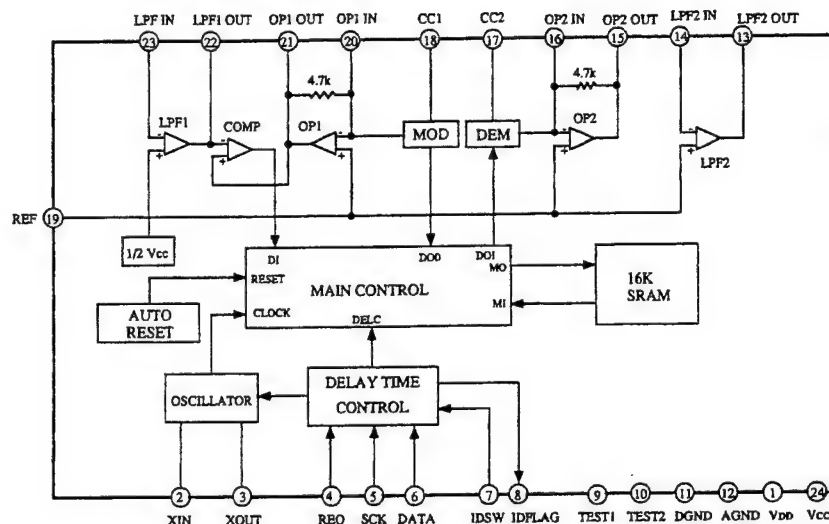
Table 1

## IC BLOCK DIAGRAMS AND DESCRIPTIONS

## NJM2177L / M69032P (Dolby Pro Logic)

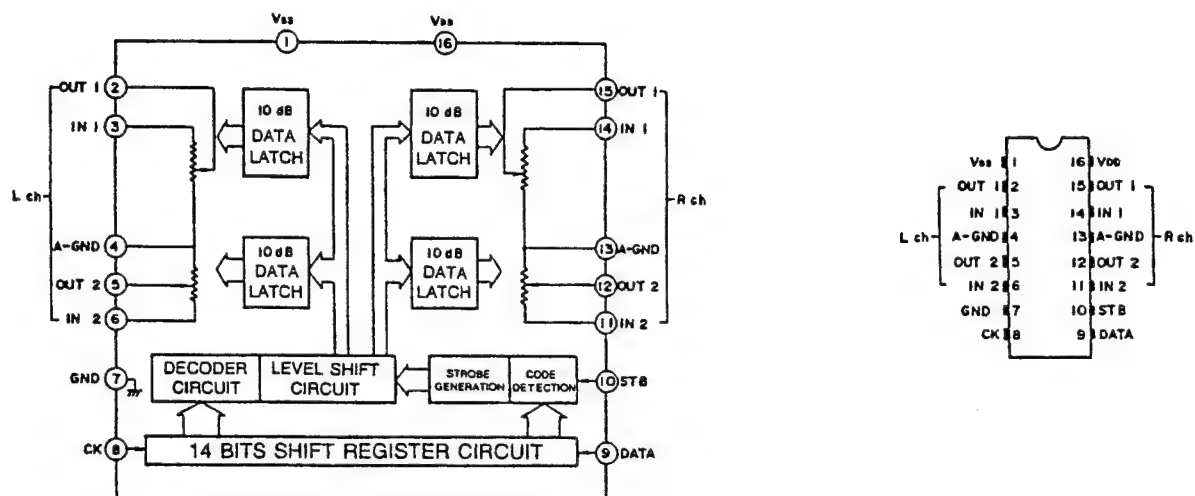
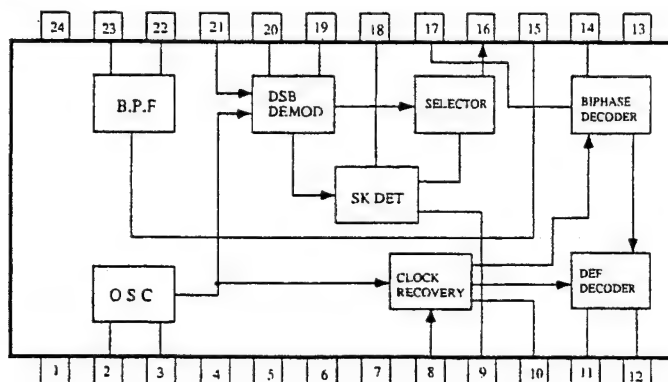


## M65830P (Digital Delay)



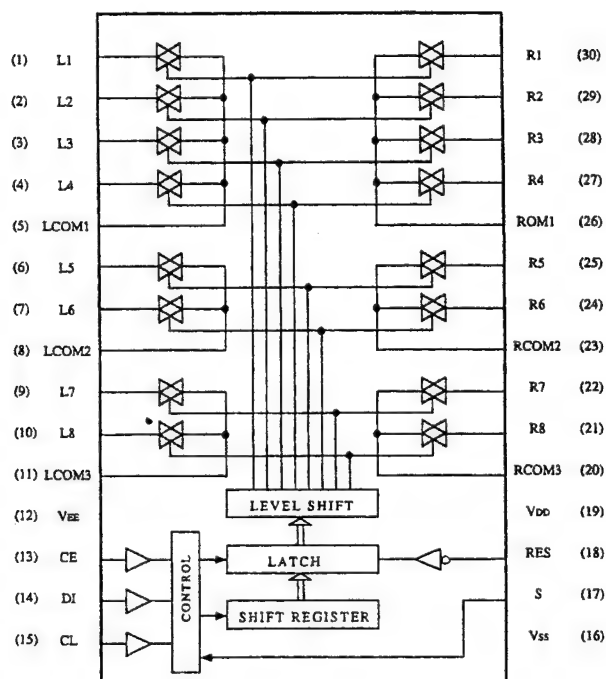
Pin No.	Mark	Function	I/O	Description
1	VDD	Digital power supply	-	
2	XIN	Resonator input	I	Connect the 2MHz ceramic resonator
3	XOUT	Resonator output	O	
4	REQ	Request	I	Data request input
5	SCK	Shift lock	I	Serial data shift clock input
6	DATA	Data	I	Serial data input
7	IDSW	ID switch	I	External input of 4th bit of ID code
8	IDFLAG	ID flag	O	Data input confirmation pulse and serial data output
9	TEST1	Test 1	-	Normal mode when low level
10	TEST2	Test 2	-	Normal mode when low level
11	D GND	Digital ground	-	
12	A GND	Analog ground	-	
13	LPF2 OUT	LPF filter 2 output	O	
14	LPF2 IN	LPF filter 2 input	I	
15	OP2 OUT	Operation amp. 2 output	O	
16	OP2 IN	Operation amp. 2 input	I	
17	CC2	Current control 2	-	Demodulation ADM control
18	CC1	Current control 1	-	Modulation ADM control
19	REF	Reference	-	Analog reference voltage=1/2VCC
20	OP1 IN	Operation amp. 1 input	I	
21	OP1 OUT	Operation amp. 1 output	O	
22	LPF1 OUT	LPF filter 1 output	O	
23	LPF1 IN	LPF filter 1 input	I	
24	VCC	Analog power supply	-	

## TC9213P (Electro Volume)

 $\mu$ PD1346CS (RDS Decoder)

No.	Terminal	Description	No.	Terminal	Description
1	Vcc	Supply voltage for the digital circuit	13	GND	Ground for the analog circuit
2	OSC IN	Resonator input	14	INTEG	Integrating filter terminal
3	OSC OUT	Resonator output	15	BPF ADJ	Adjustment fc of band pass filter
4	GND	Ground for the digital circuit	16	PSK OUT	Biphase signal output
5	TEST1	Test input	17	PSK IN	Biphase decoder input
6	TEST2	Test input	18	LPF SK	Low pass filter for the detection SK
7	OP.CTL	Control input of the operation stop	19	LPF Q	Low pass filter for the crossed detector
8	S/L CTL	Mode control input of the synchronizing detection	20	LPF I	Low pass filter for the synchronizing detector
9	SK OUT	SK detection output	21	DSB IN	DSB demodulator circuit input
10	RDS OUT	RDS synchronizing detection output	22	BPF OUT	Band pass filter output
11	CLOCK OUT	Bit rate clock output	23	BPF IN	Band pass filter input
12	DATA OUT	RDS data output	24	Vcc	Supply voltage for analog circuit

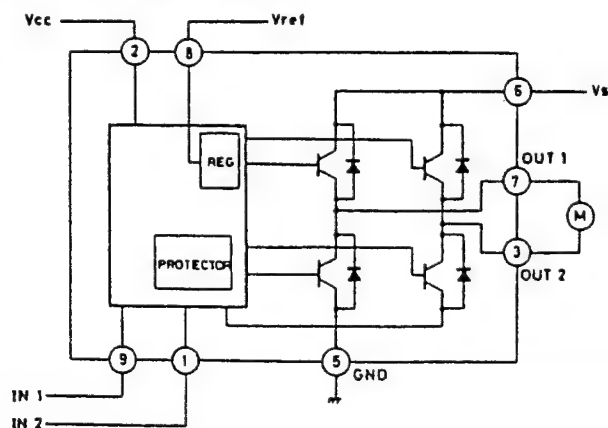
## LC7821N (Analogue switch)



Pin No.	Terminal	Description
1	PHONO	Input/output terminals of audio signal of left channel.
2	CD	
3	TAPE 1 REC	
4	TAPE 1 PB	
5	L COM 1	
6	MONITOR	
7	SOURCE	Control to the inside analogue switch at the serial data.
8	L COM 2	
9	VIDEO 1	
10	TUNER	
11	L COM 3	
12	Vss	Negative power supply terminal. (-15V)
13	CE	Chip enable terminal. Connect the terminal SEL of microprocessor.
14	DI	Serial data input terminal. Connect the terminal DATA of microprocessor.
15	CL	Serial clock input terminal. Connect the terminal CL of microprocessor.

Pin No.	Terminal	Description
16	Vss	Ground terminal.
17	S	Selector terminal.
18	RES	Reset terminal.
19	VDD	Power supply terminal. (+15V)
20	R COM 3	Input/output terminals of audio signal of right channel.
21	TUNER	
22	VIDEO 1	
23	R COM 2	
24	SOURCE	
25	MONITOR	
26	R COM 1	Control to the inside analogue switch at the serial data.
27	TAPE 1 PB	
28	TAPE 1 REC	
29	CD	
30	PHONO	

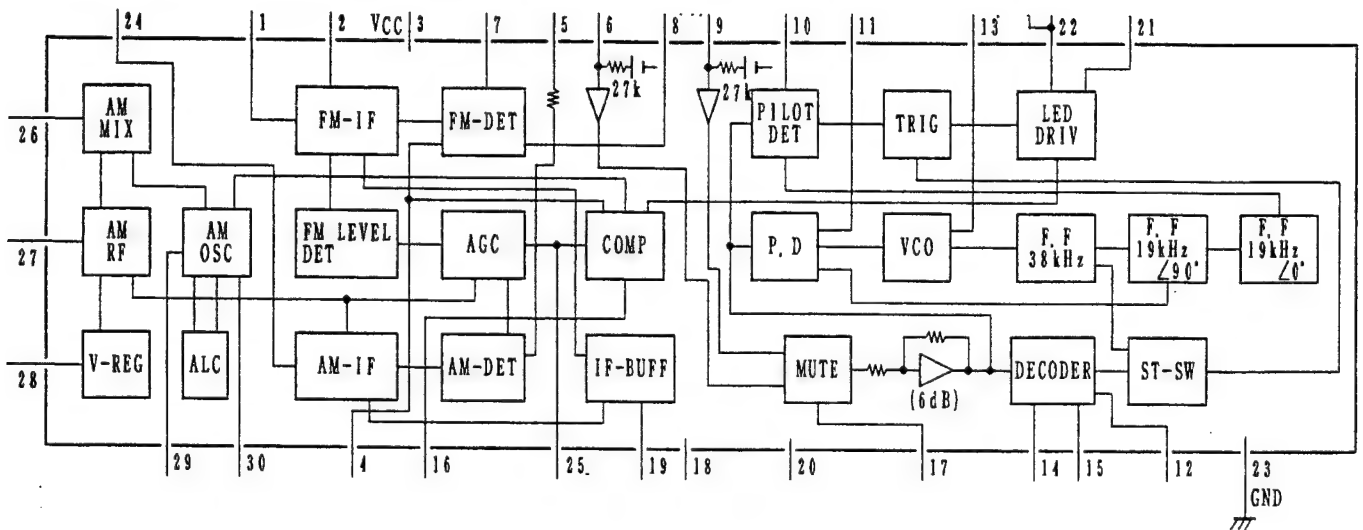
## TA7291S (Volume driver)



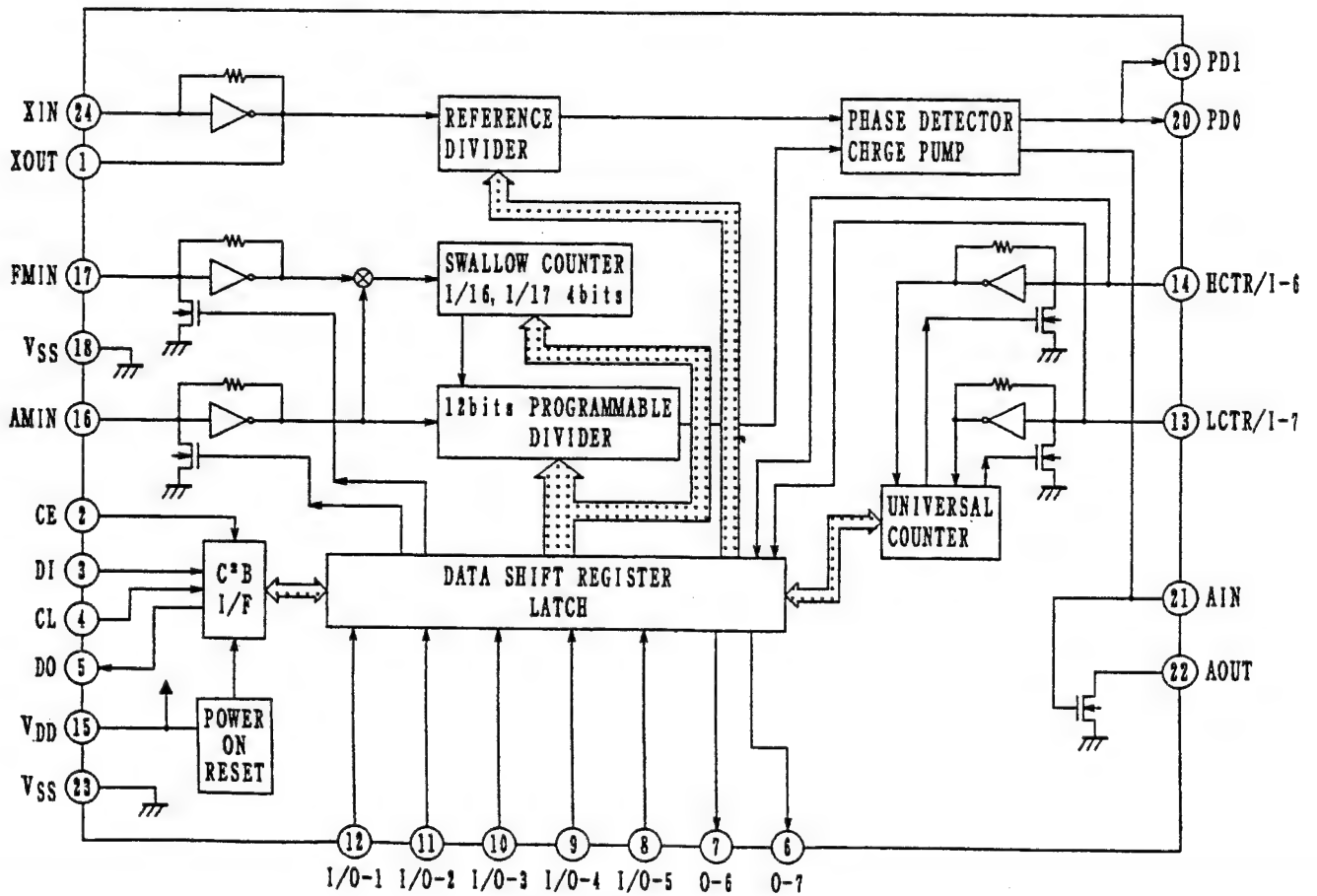
INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	$\infty$	$\infty$	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW: Counter clockwise direction  
CW: Clockwise direction

### LA1851N (AM, FM IF and MPX)

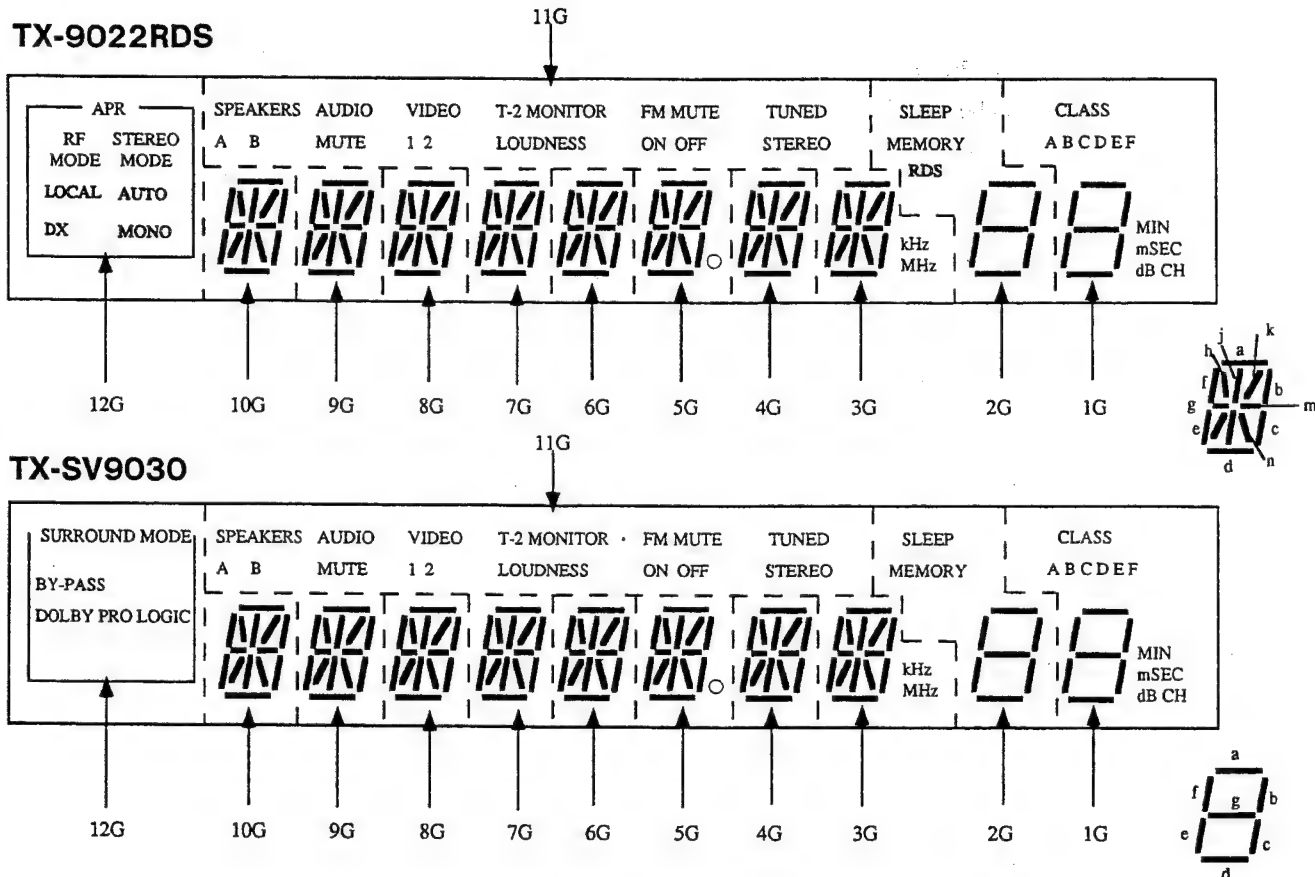


### LC72140 (PLL Frequency Synthesized LSI)





## FL TUBE



TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12
ELECTRODE	F1	F1	NP	NP	NP	Pv	Pu	Pt	Ps	Pr	Pp	Pn
TERMINAL NO.	13	14	15	16	17	18	19	20	21	22	23	24
ELECTRODE	Pm	Pk	Pj	Ph	Pg	Pf	Pe	Pd	Pc	Pb	Pa	NP
TERMINAL NO.	25	26	27	28	29	30	31	32	33	34	35	36
ELECTRODE	NP	NP	NP	12G	11G	10G	9G	8G	7G	6G	5G	4G
TERMINAL NO.	37	38	39	40	41	42	43	44	45	46		
ELECTRODE	3G	2G	1G	NP	NP	NP	NP	NP	F2	F2		

## ADJUSTMENT PROCEDURES

### Preparation

#### 1. Input

FM mono: 1kHz, 75kHz devi., 60dB/μV

FM stereo: 1kHz, 75kHz devi., 60dB/μV

Pilot signal 19kHz 7.5kHz devi.

AM: 400Hz 30% mod.

#### 2. Outputs

Connect the non-inductive type resistors of 8 ohms to the speaker terminals A unless otherwise noted.

### TX-SV9030

#### 3. Standard Knob Positions

Master Volume Control .....	Maximum
Bass Control .....	Center
Treble Control .....	Center
Balance Control .....	Center
Input selector .....	CD
Tape 2 Monitor .....	OFF
Muting .....	OFF
Loudness .....	OFF
Speakers .....	ON
Dolby Surround .....	OFF
Center Mode .....	Wide Band
Delay Time .....	20 ms
Center Level .....	0 dB
Rear Level .....	0 dB

#### Idling Current Adjustment

Connect the DC voltmeter to the terminals P521, P522, and P821 (VCT and IID) on the main circuit pc board.

Adjust the trim resistors R537, R538 and R837 so that the indicator of voltmeter becomes  $3 \pm 0.5\text{mV}$ .

NOTE: Adjust after switching on for 5 minutes.

Set Volume knob to the minimum position.

### TX-9022RDS

#### 3. Standard Knob Positions

Master Volume Control .....	Maximum
Bass Control .....	Center
Treble Control .....	Center
Balance Control .....	Center
Input selector .....	CD
Tape 2 Monitor .....	OFF
Muting .....	OFF
Loudness .....	OFF
Speakers .....	A

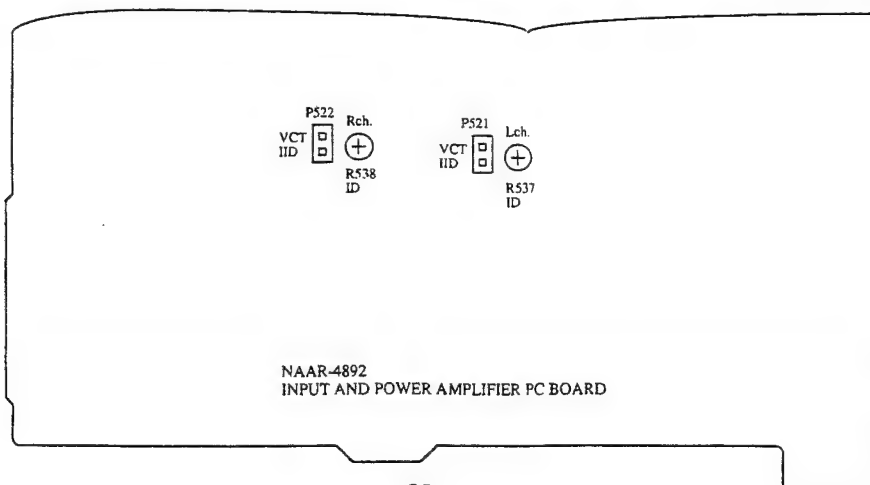
#### Idling Current Adjustment

Connect the DC voltmeter to the terminals P521, and P522 (VCT and IID) on the main circuit pc board.

Adjust the trim resistors R537, and R538 so that the indicator of voltmeter becomes  $3 \pm 0.5\text{mV}$ .

NOTE: Adjust after switching on for 5 minutes.

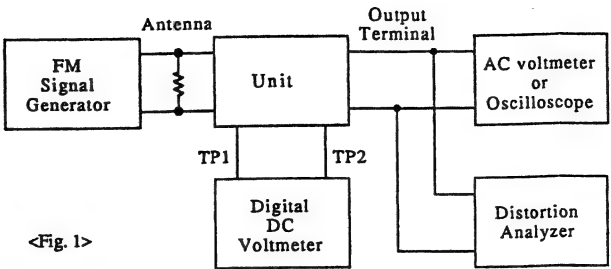
Set Volume knob to the minimum position.



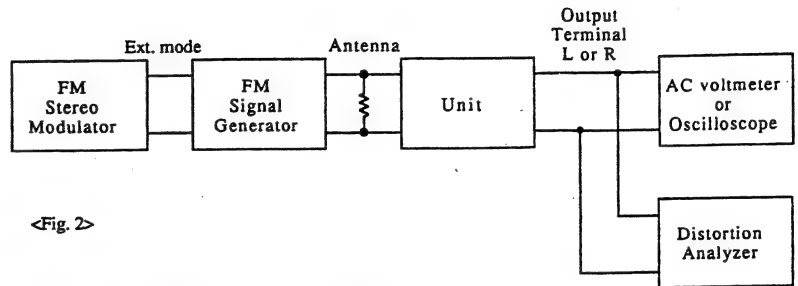
- Set the unit to the test mode.
1. Press and hold down the CD button, then press the Power button.
  2. "TEST-" is displayed on the display.
  3. While "TEST-" is displayed, press the FM key.

### FM ADJUSTMENT

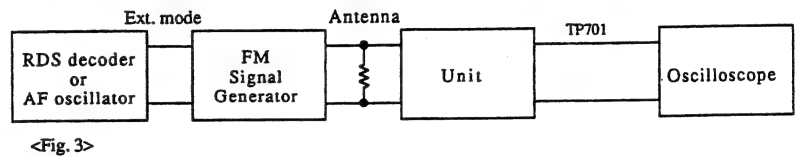
Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch:ON/STEREO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than ±180°
Stereo Separation	1	Fig.2	99.0MHz Ext. mod. 65dBf(60dB)	Channel L 1kHz	99.0MHz	Channel R AC voltmeter	R202	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig.2	99.0MHz 21.2dBf(16dB)	—	99.0MHz	Oscilloscope or TUNED indicator	R101	Signal output or light on	
RDS		Fig.3	99.0MHz Ext. mod.40dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R786	Maximum	TX-9022RDS only



<Fig. 1>



<Fig. 2>

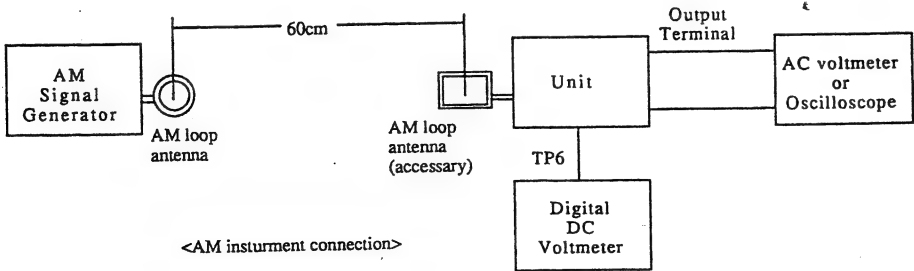


<Fig. 3>

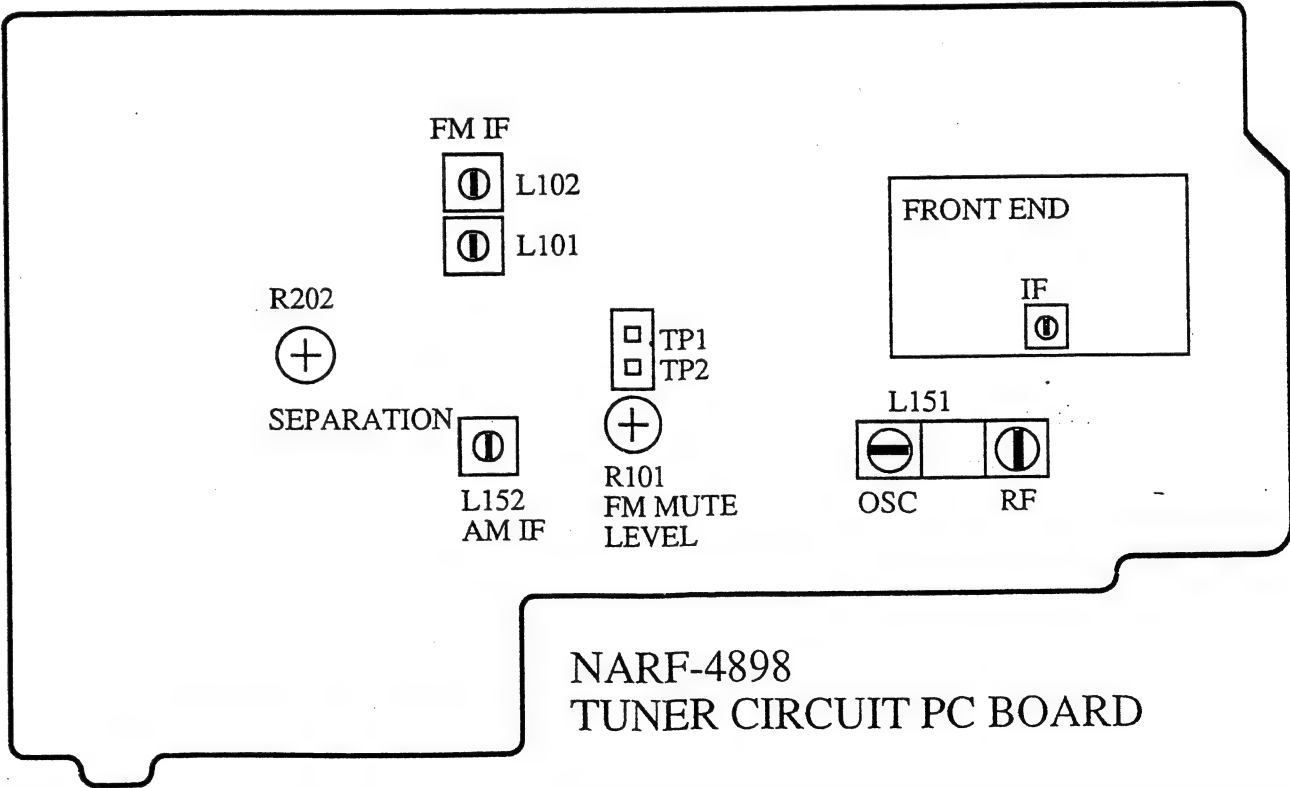
### AM ADJUSTMENT

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz	Digital DC voltmeter	OSC coil on RF block L151	1.3±0.1V
2	603kHz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L152	Maximum

Reference Specification  
FM tuned voltage:87.5MHz~108.0MHz  
More than 1.3V~Less than 10V  
AM tuned voltage:522kHz~1611kHz  
1.3±0.2V~Less than 9.0V



<AM instrument connection>

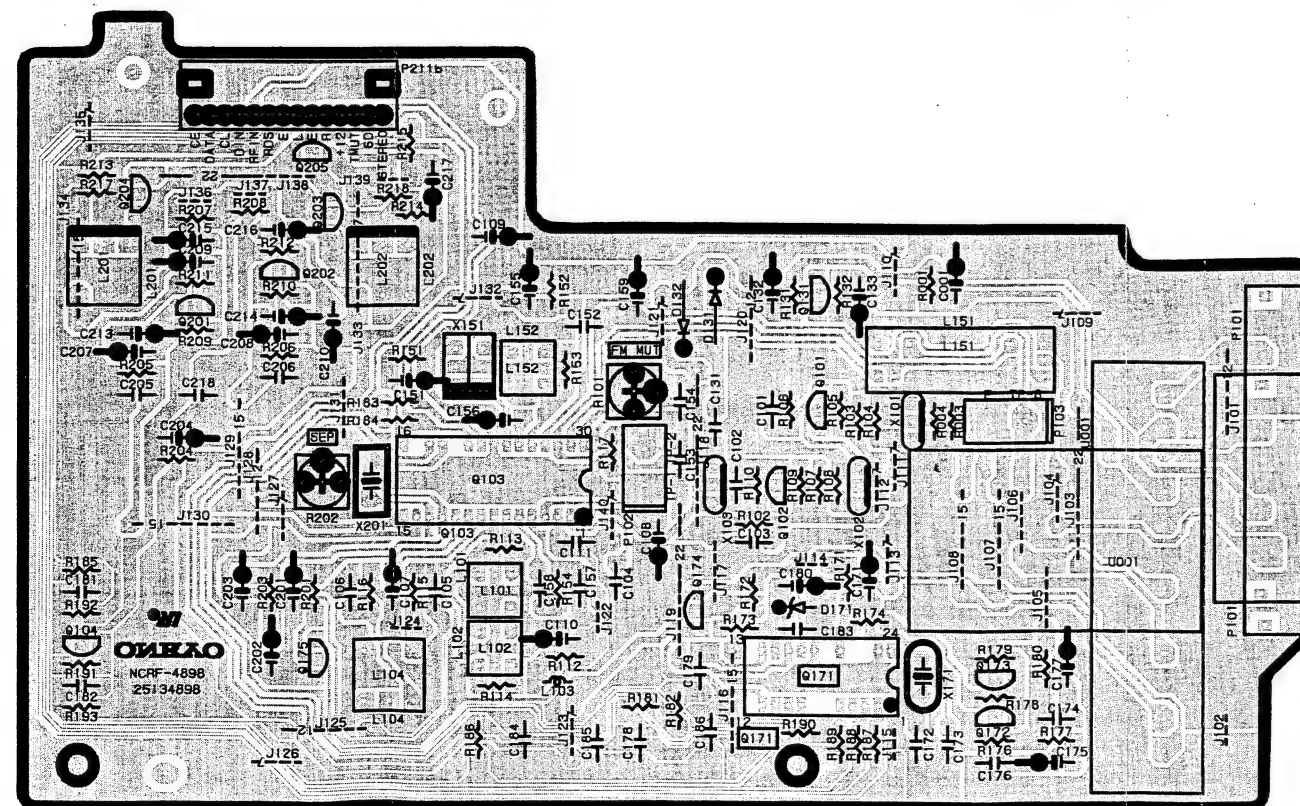
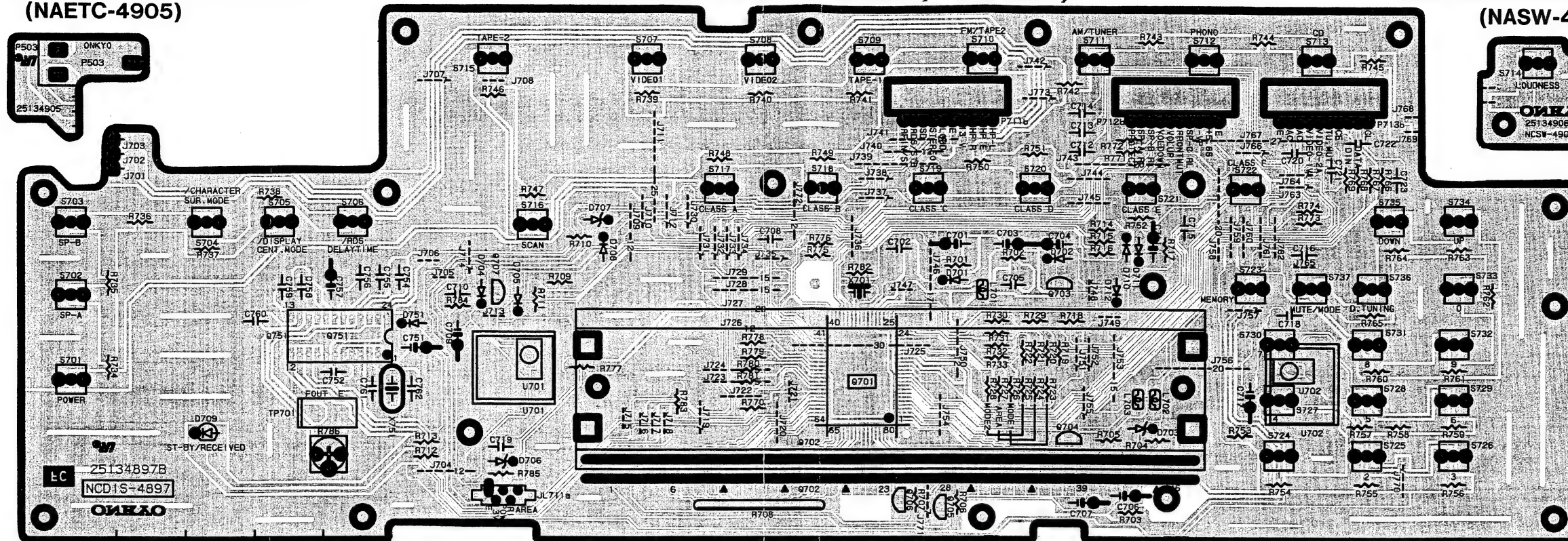


### PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

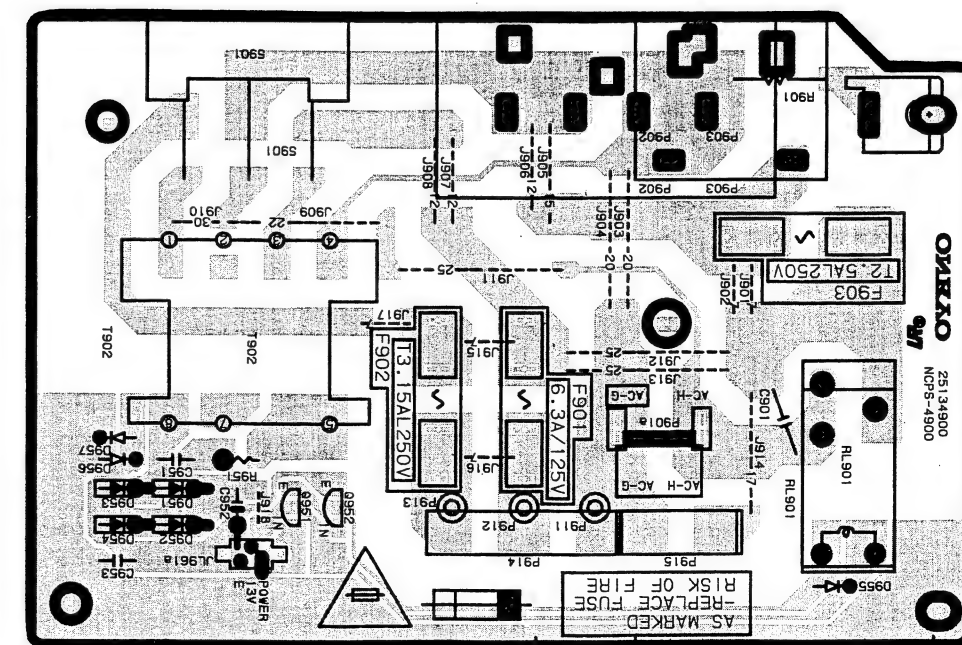
## HEADPHONE TERMINAL PC BOARD (NAETC-4905)

## DISPLAY CIRCUIT PC BOARD (NADIS-4897)

**LOUDNESS SWITCH PC BOARD  
(NASW-4906)**



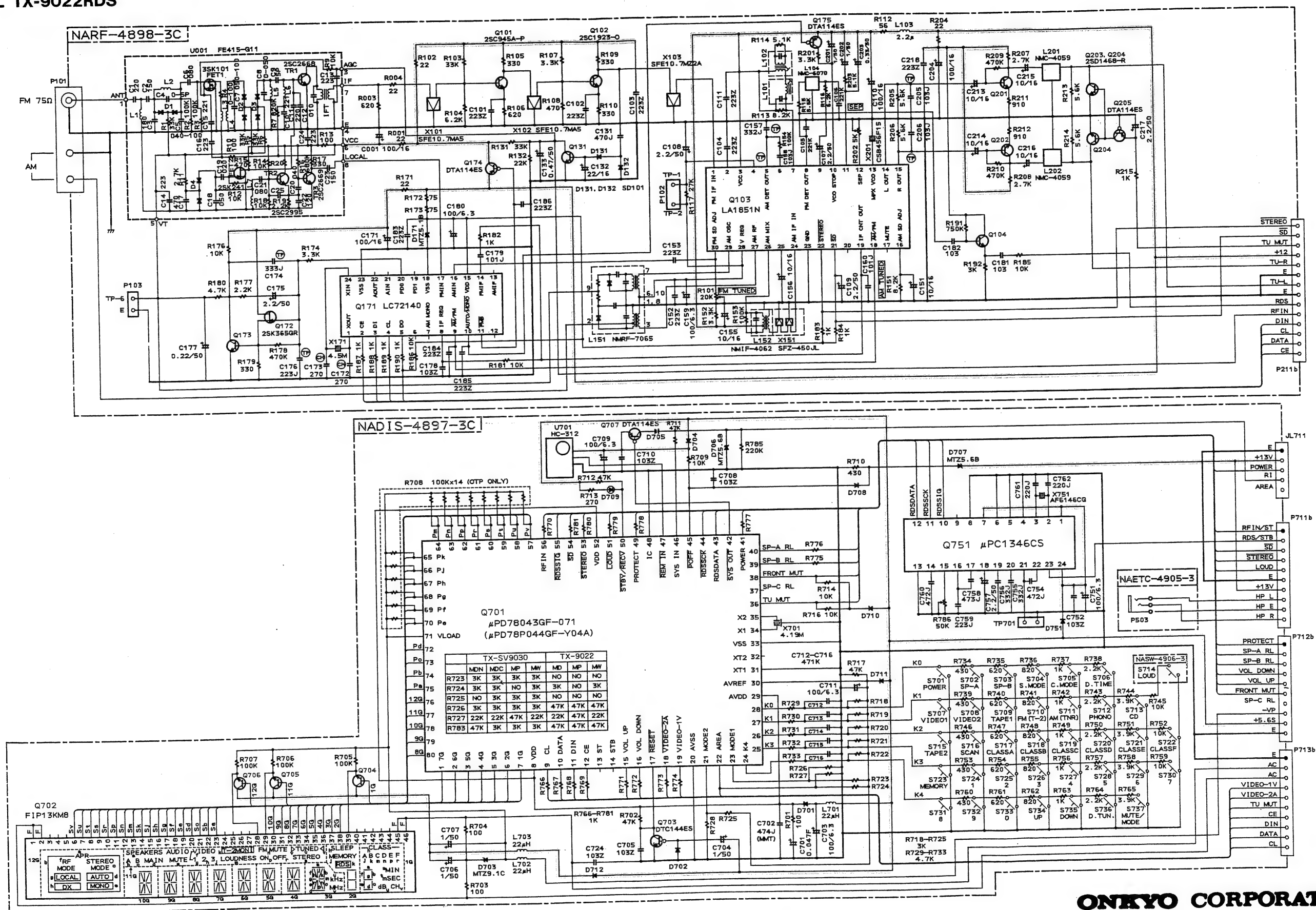
## TUNER CIRCUIT PC BOARD (NARF-4898)



## POWER SUPPLY CIRCUIT PC BOARD (NAPS-4900)

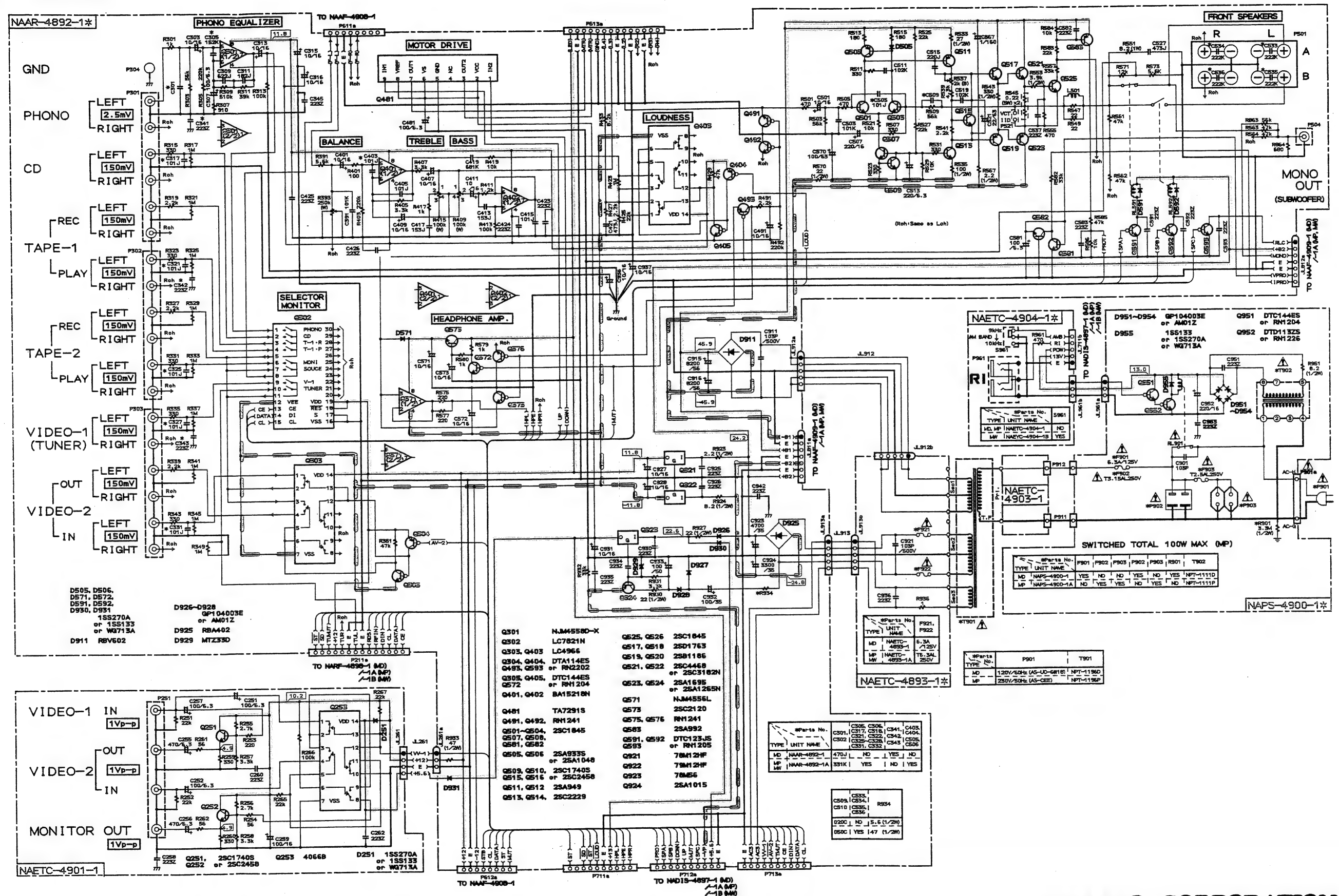


# SCHEMATIC DIAGRAM MODEL TX-9022RDS


**ONKYO CORPORATION**

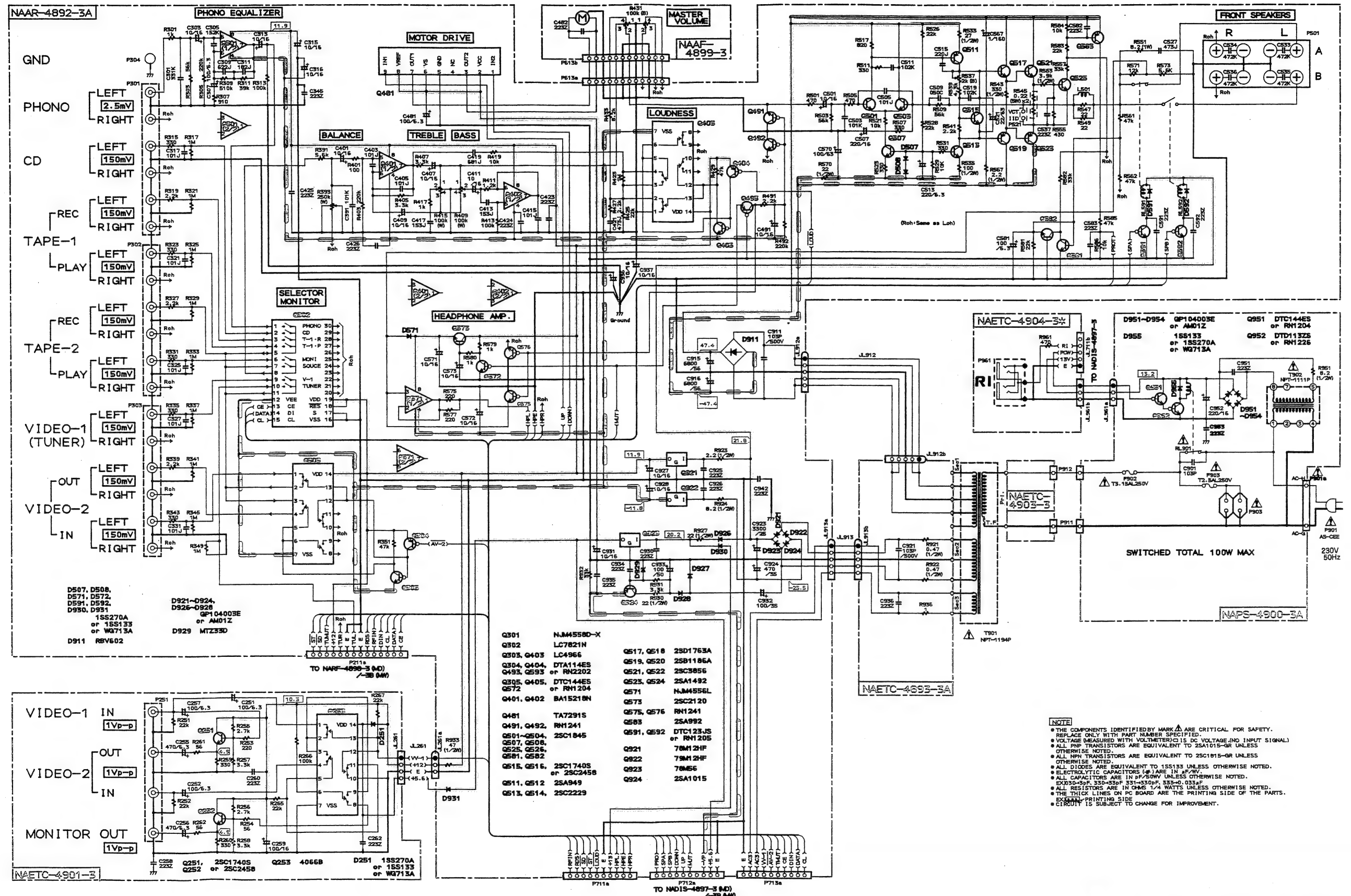
## SCHEMATIC DIAGRAM

### MODEL TX-SV9030



**ONKYO CORPORATION**

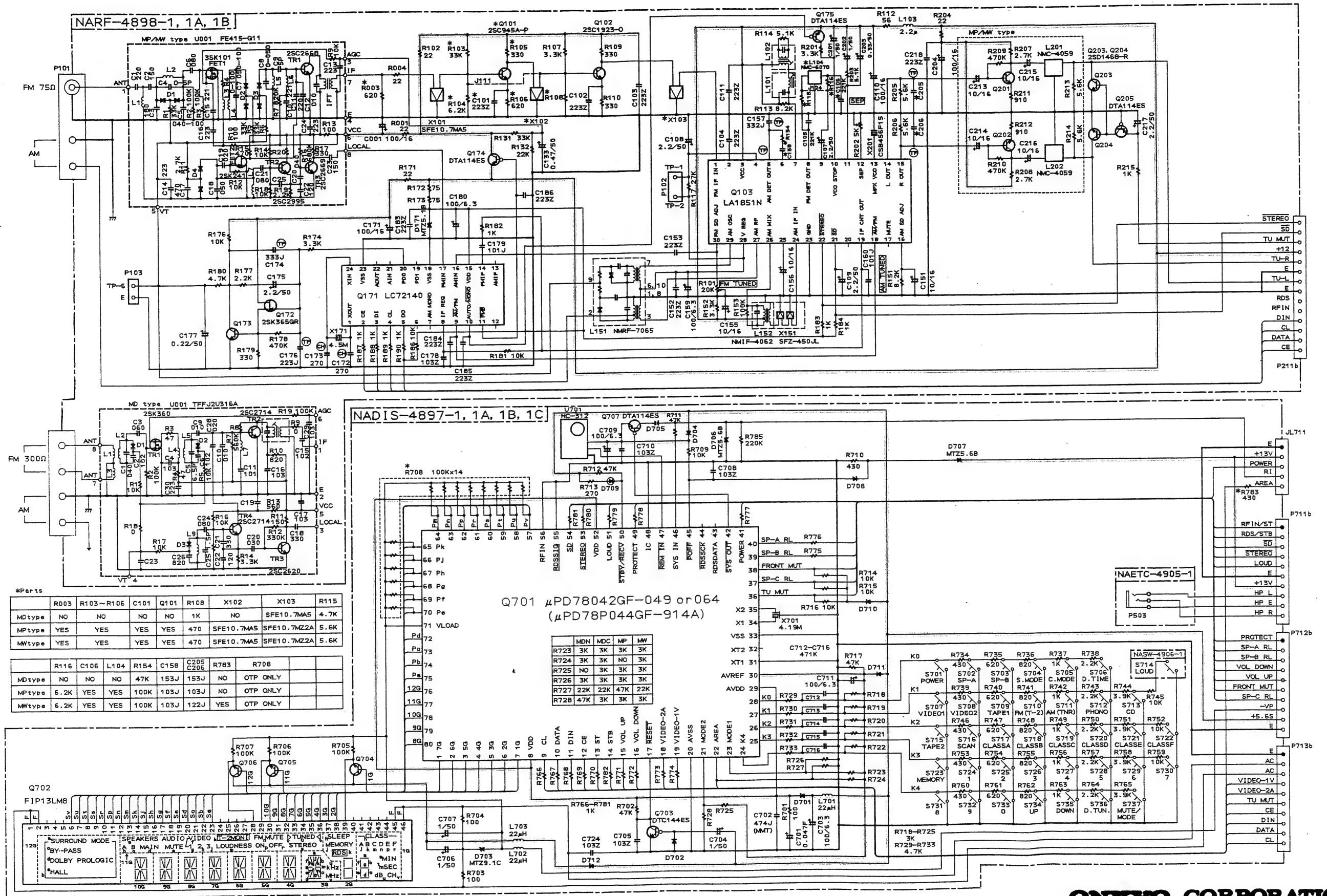
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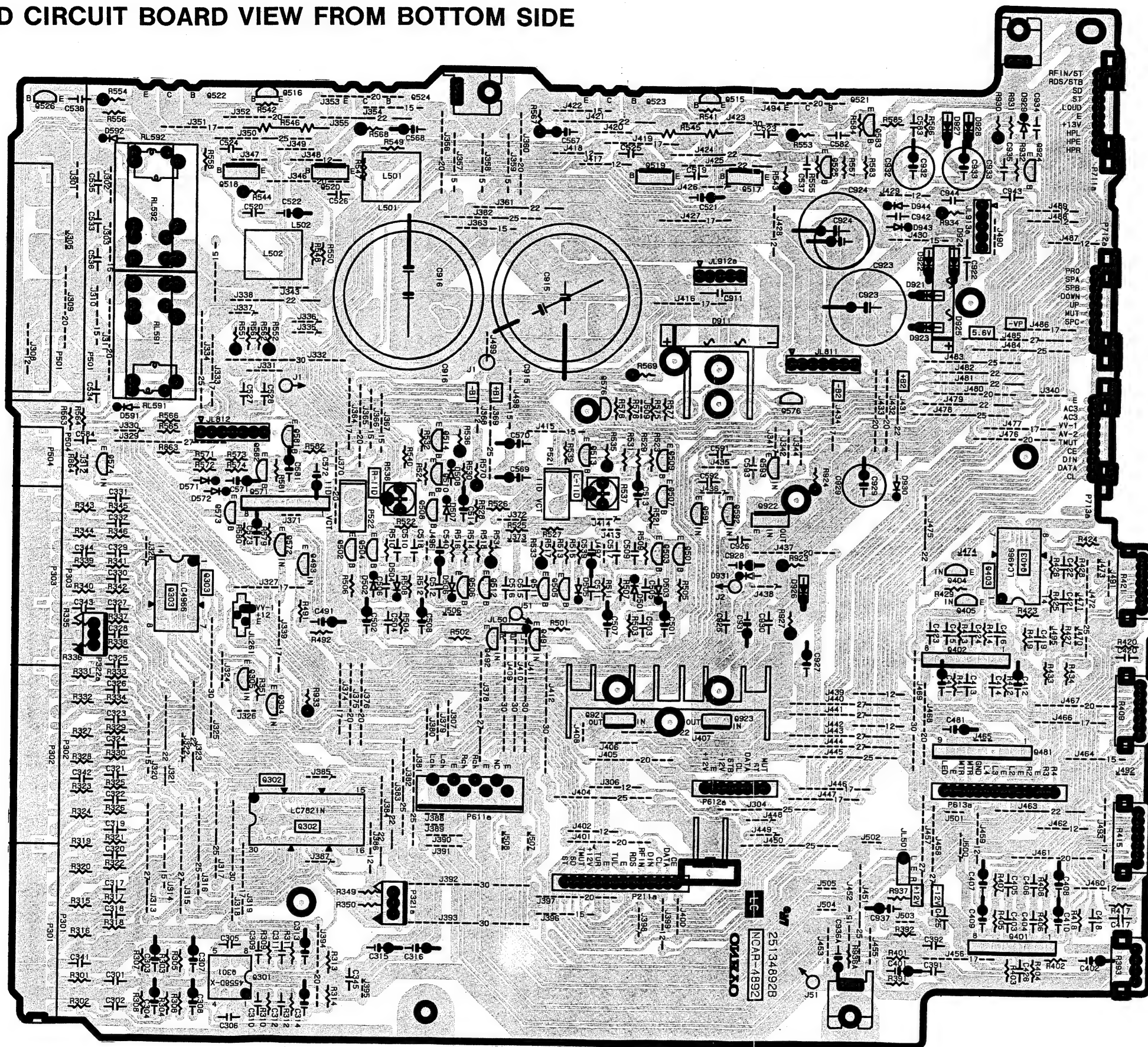
ONKYO CORPORATION



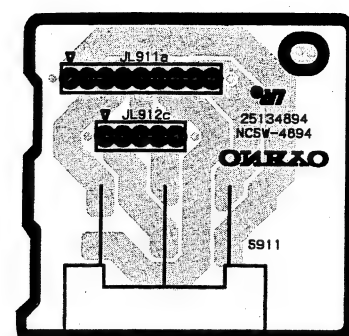
# SCHEMATIC DIAGRAM MODEL TX-SV9030



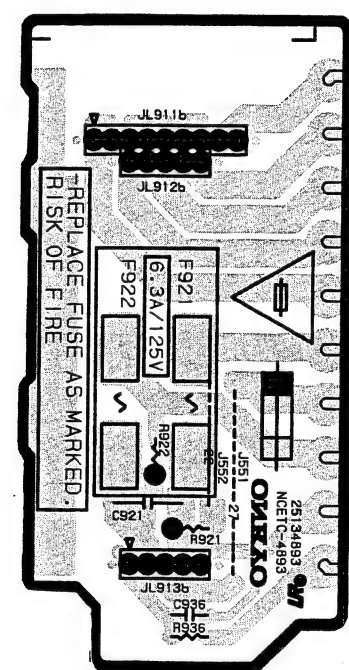
# PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



MAIN CIRCUIT PC BOARD (NAAR-4892)



SWITCH PC BOARD (NASW-4894)

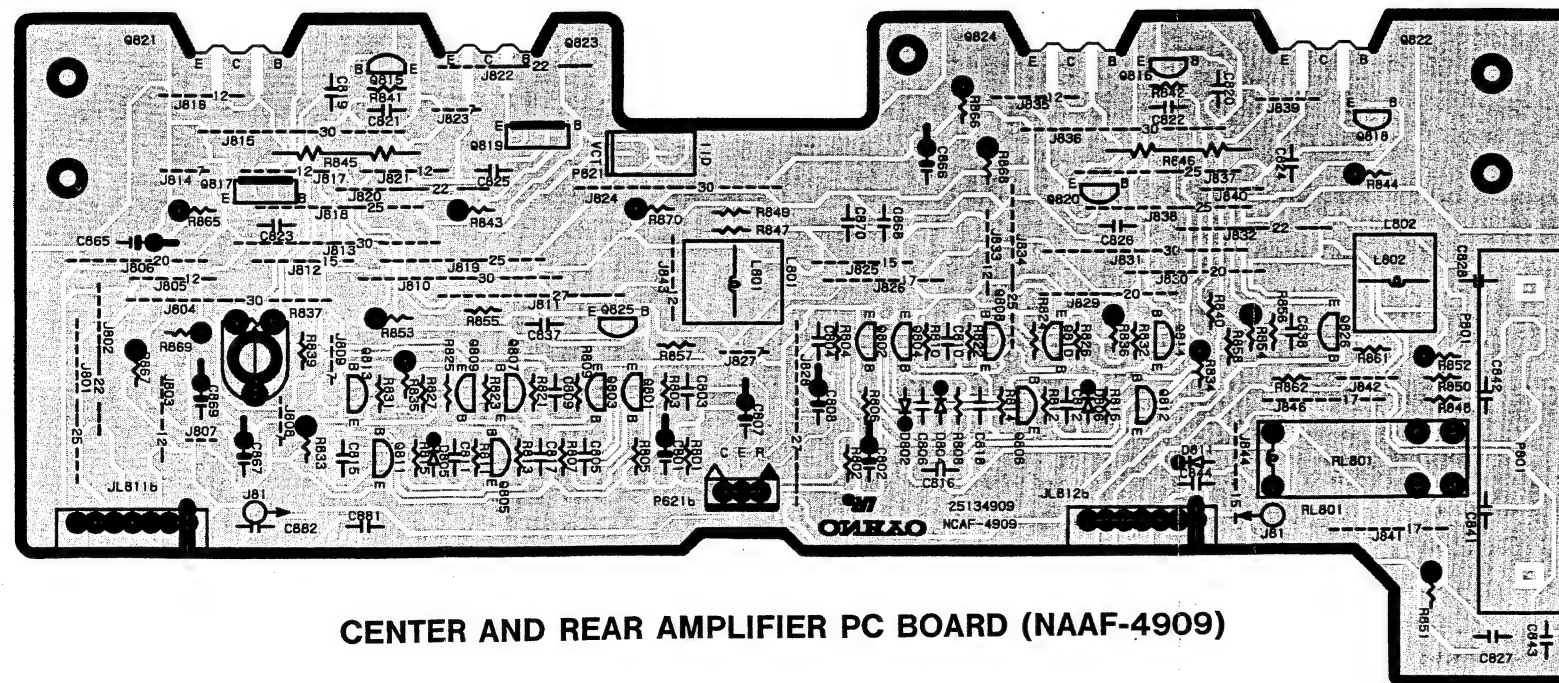
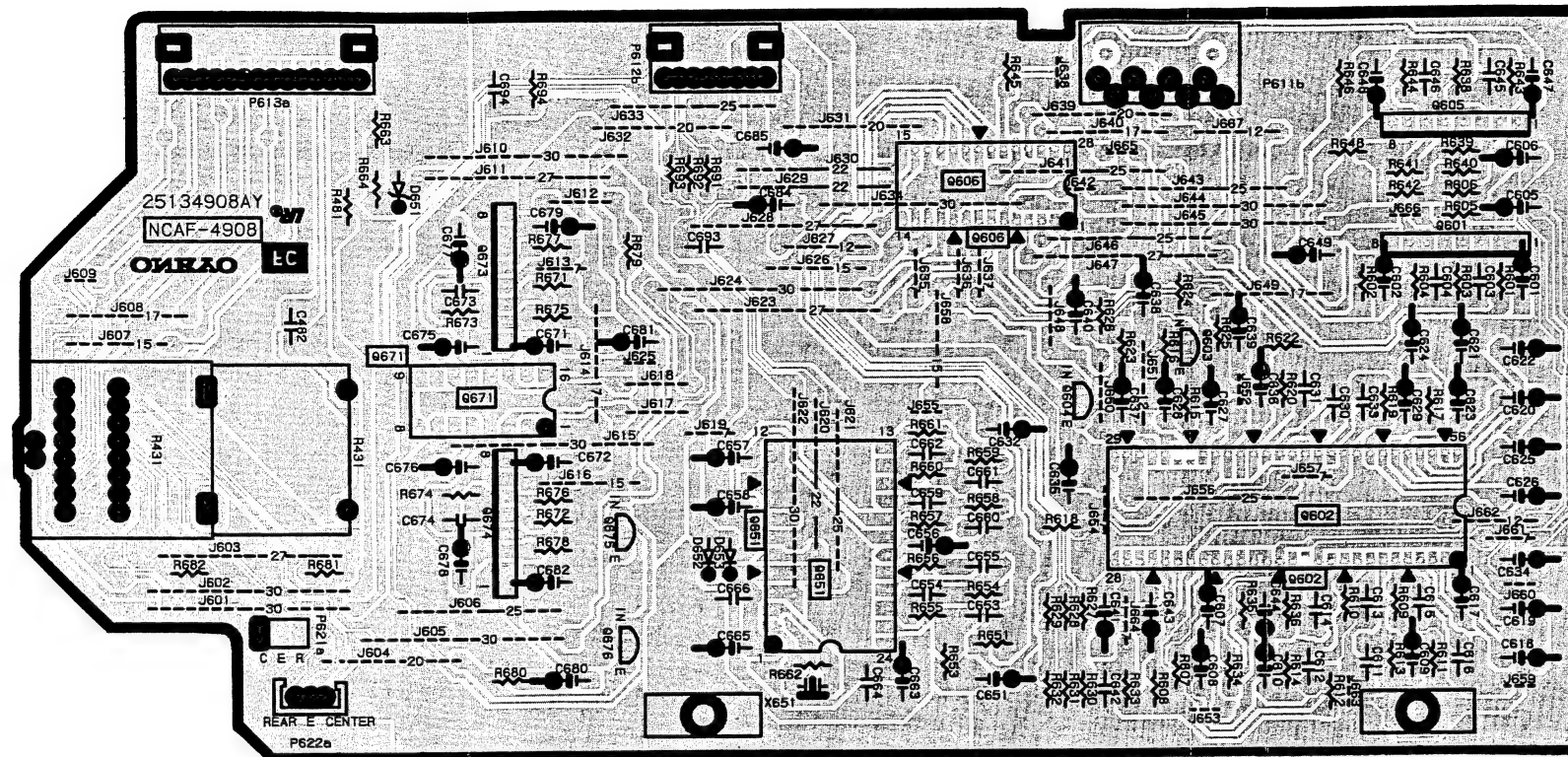


POWER SUPPLY CIRCUIT  
PC BOARD (NAETC-4893)

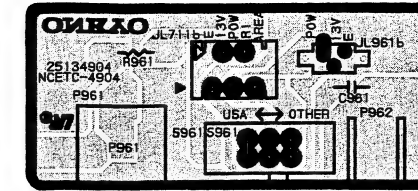


## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

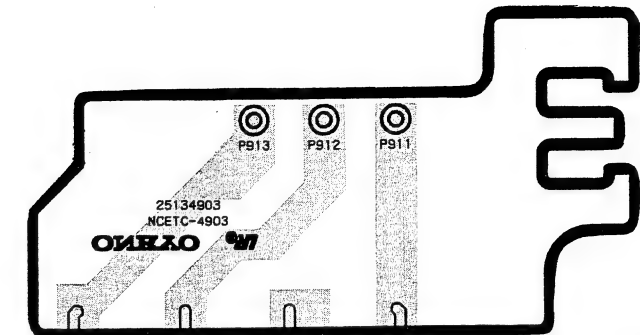
SURROUND CIRCUIT PC BOARD (NAAF-4908)



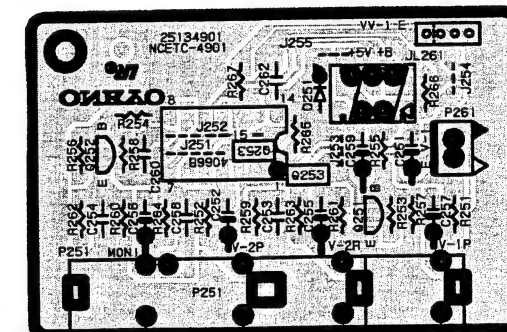
CENTER AND REAR AMPLIFIER PC BOARD (NAAF-4909)



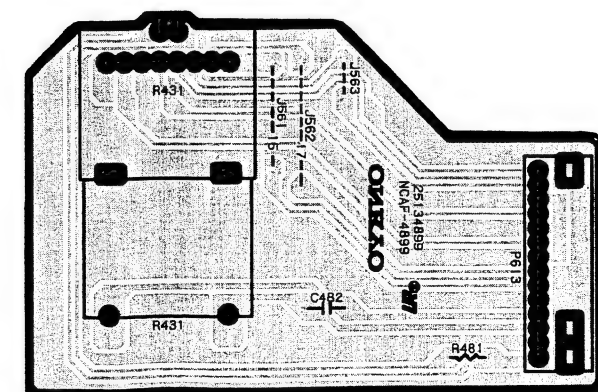
RI TERMINAL PC BOARD (NAETC-4904)



PRIMARY CIRCUIT PC BOARD (NAETC-4903)



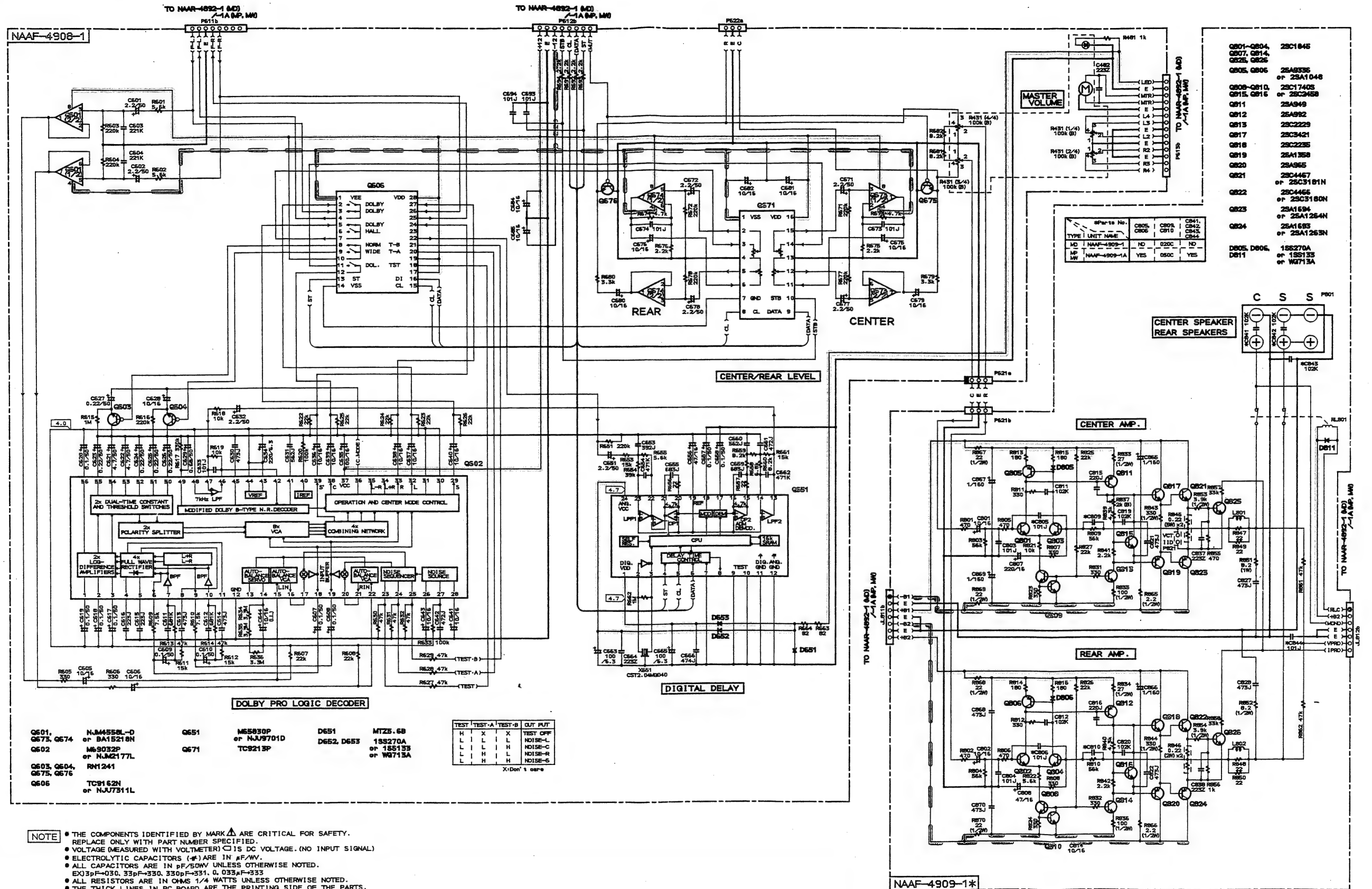
VIDEO CIRCUIT PC BOARD (NAETC-4901)



VOLUME CIRCUIT PC BOARD (NAAF-4899)

## SCHEMATIC DIAGRAM

### MODEL TX-SV9030



**ONKYO CORPORATION**



## PRINTED CIRCUIT BOARD-PARTS LIST

## TX-9022RDS

## MAIN CIRCUIT PC BOARD (NAAR-4892-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Diodes	
Q301	222502	NJM4558D-X	D507,D508	223222,	WG713A,
Q302	22240280	LC7821N	D571,D572	223205 or	1SS270A or
Q303,Q403	22240025	LC4966	D591,D592	223163	1SS133
Q401,Q402	22240247	BA15218N	D911	22380038	RBV602
Q481	22240239	TA7291S	D921-D924	22380035 or	GP104003E or
Q571	22240752	NJM4556L	D926-D928	22380046	AM01Z
Q921	222780125NEC	78M12HF	D929	224453304	MTZ33D
Q922	222790125	79M12HF	D930,D931	223222,	WG713A,
Q923	222780565JRC	78M56		223205 or	1SS270A or
	Transistors			223163	1SS133
Q304,Q404	2213510 or	DTA114ES or		Coils	
Q493	2214350	RN2202	L501,L502	231176S	S-1.3C
Q305,Q405	221282 or	DTC144ES or		Capacitors	
Q572	2213560	RN1204	C303,C304	354741009	10 $\mu$ F,16V,Elect.
Q491,Q492	2213631 or	RN1241-A or	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
Q575,Q576	2213632	RN1241-B	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
Q501-Q504	2211732 or	2SC1845-F or	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
Q507,Q508	2211733	2SC1845-E	C313-C316	354741009	10 $\mu$ F,16V,Elect.
Q511,Q512	2211353 or	2SA949-O or	C391,C392	374721015	100pF $\pm$ 10%,50V,Plastic
	2211354	2SA949-Y	C401,C402	354741009	10 $\mu$ F,16V,Elect.
Q513,Q514	2211633 or	2SC2229-O or	C407-C412	354741009	10 $\mu$ F,16V,Elect.
	2211634	2SC2229-Y	C413,C414	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
Q515,Q516	2213284 or	2SC1740S-R or	C417,C418	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
	2212115	2SC2458-GR	C421,C422	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
Q517,Q518	2202034 or	2SD1763A-D or	C481,C514	354721019	100 $\mu$ F,6.3V,Elect.
	2202035	2SD1763A-E	C491	354741009	10 $\mu$ F,16V,Elect.
Q519,Q520	2202024 or	2SB1186A-D or	C501,C502	354741009	10 $\mu$ F,16V,Elect.
	2202025	2SB1186A-E	C503,C504	374721015	100pF $\pm$ 10%,50V,Plastic
Q521,Q522	2201653,	* 2SC3856-O,	C507,C508	354742219	220 $\mu$ F,16V,Elect.
	2201654 or	* 2SC3856-Y or	C513,C514	354722219	220 $\mu$ F,6.3V,Elect.
	2201655	* 2SC3856-P	C521,C522	354772209	22 $\mu$ F,63V,Elect.
Q523,Q524	2201663,	* 2SA1492-O,	C527,C528	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
	2201664 or	* 2SA1492-Y or	C567,C568	354700109	1 $\mu$ F,160V,Elect.
	2201665	* 2SA1492-P	C570	354771019	100 $\mu$ F,63V,Elect.
Q525,Q526	2211732 or	2SC1845-F or	C571-C573	354741009	10 $\mu$ F,16V,Elect.
	2211733	2SC1845-E	C581	354721019	100 $\mu$ F,6.3V,Elect.
Q573	2211163 or	2SC2120-O or	C915,C916	3504266 or	# 6800 $\mu$ F,56V or
	2211164	2SC2120-Y		3504267	# 6800 $\mu$ F,56V,Elect.
Q581,Q582	2211732 or	2SC1845-F or	C923	354753329	3300 $\mu$ F,25V,Elect.
	2211733	2SC1845-E	C924	354764719	470 $\mu$ F,35V,Elect.
Q583	2211792 or	2SA992-F or	C927,C928	354741009	10 $\mu$ F,16V,Elect.
	2211793	2SA992-E	C931	354741009	10 $\mu$ F,16V,Elect.
Q591,Q592	2213640 or	DTC123JS or	C932	354761019	100 $\mu$ F,35V,Elect.
	2214660	RN1205	C933	354781019	100 $\mu$ F,50V,Elect.
Q924	2211455	2SA1015-GR	C936-C938	354741009	10 $\mu$ F,16V,Elect.
			Resistors		
			R393	5104225	N11RGLC250KWT22Z, Balance
			R409	5104230	N14RLC100KWT22Z,Bass
			R415	5104230	N14RLC100KWT22Z,Treble

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors			Diodes	
R533,R534	443522704	27 ohm,1/2W,Metal oxide	D701,D702	223205 or	1SS270A or
R535,R536	443521014	100 ohm,1/2W,Metal oxide	D704,D705	223163	1SS133
R537,R538	5210259	N06HR 2KBC,Trim	D703	224450913	MTZ9.1C
R543,R544	443523314	330 ohm,1/2W,Metal oxide	D706,D707	224450562	MTZ5.6B
R545,R546	4000132Y	0.22 ohm $\times$ 2,5W+5W,Metal plate	D708,D751	223205 or	1SS270A or
R551,R552	453630824	8.2 ohm,1W,Metal	D710-D712	223163	1SS133
R553,R554	443523924	3.9 kohm,1/2W,Metal oxide	D709	225291D	SEL4910D-D,LED
R567,R568	453530224	2.2 ohm,1/2W,Metal		Resonator	
R570	443522204	22 ohm,1/2W,Metal oxide	X701	3010163	CST4.19MGW,Ceramic
R923	453530224	2.2 ohm,1/2W,Metal	X751	3010203	AF6146CG,X'tal
R924	453530824	8.2 ohm,1/2W,Metal		Coils	
R927,R930	443522204	22 ohm,1/2W,Metal oxide	L701-L703	233454K220	NCH-1452 220K
R933	443524704	47 ohm,1/2W,Metal oxide		Capacitors	
	Relays		C701	3000075Y	0.047F,5.5V,Super
RL591,RL592	25065339	NRL-2P5A-DC24-046	C702	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
	Plugs		C703,C709	354721019	100 $\mu$ F,6.3V,Elect.
P211a	25055652	NPLG-14P608	C704	354780109	1 $\mu$ F,50V,Elect.
P613a	25055651	NPLG-12P607	C706,C707	354780109	1 $\mu$ F,50V,Elect.
	Terminals		C711	354721019	100 $\mu$ F,6.3V,Elect.
P301-P303	25045300	NPJ-6PDBL-159	C751	354721019	100 $\mu$ F,6.3V,Elect.
P501	25060158	NTM-8PDMN084	C753,C754	374724724	4700pF $\pm$ 5%,50V,Plastic
	Sockets		C755,C756	374723324	3300pF $\pm$ 5%,50V,Plastic
P711a-P713a	25051046	NSCT-10P833	C757	354780229	2.2 $\mu$ F,50V,Elect.
JL261a	25051087	NSCT-3P874	C758	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
JL912a,JL913a	25051109	NSCT-5P896	C759	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
			C760	374724724	4700pF $\pm$ 5%,50V,Plastic
	POWER SUPPLY CIRCUIT PC BOARD(NAETC-4893-3A)			Resistor	
CIRCUIT NO.	PART NO.	DESCRIPTION	R786	5210265	N06HR50KBC,Trim
R921,R922	453534794	0.47 ohm,1/2W,Metal resistors		Switches	
			S701-S713	25035652	NPS-111-S604
			S715-S737	25035652	NPS-111-S604
	DISPLAY CIRCUIT PC BOARD (NADIS-4897-3C)			Plugs	
CIRCUIT NO.	PART NO.	DESCRIPTION	P711b-P713b	25055659	NPLG-10P615
	ICs			Holder	
Q701	22240758Y	$\mu$ PD78043GF-071		27190937Y	FL tube
Q751	22240679	$\mu$ PC1346CS		Retainer	
	FL tube			27141575Y	RI terminal
Q702	212128Y	FIP13KM8			
	Remote control sensor				
U701	24130010Y	HC-312			
	Transistors				
Q703	221282 or	DTC144ES or			
	2213560	RN1204			
Q704-Q706	2213284 or	2SC1740S-R or			
	2212115	2SC2458-GR			
Q707	2213510 or	DTA114ES or			
	2214350	RN2202			

CAUTION:Replacement for transistor of mark \*,if necessary,  
must be made from the same beta group (H FE ) as  
the original type.

CAUTIONS:Replacement for capacitor of  
mark # must be made the same  
sort capacitor.

TUNER CIRCUIT PC BOARD (NARF-4898-3C)

CIRCUIT NO.	PART NO.	DESCRIPTION
Front end		
TU001	240089	FE415-G11
ICs		
Q103	22240749Y	LA1851N
Q171	22240750Y	LC72140
Transistors		
Q101	2210746	2SC945A-P
Q102	2211723	2SC1923-O
Q104	2213284 or	2SC1740S-R or
	2212115	2SC2458-GR
Q131,Q173	2213284 or	2SC1740S-R or
Q201,Q202	2212115	2SC2458-GR
Q172	2212445	2SK365-GR
Q174,Q175	2213510 or	DTA114ES or
Q205	2214350	RN2202
Q203,Q204	2212794	2SD1468-R
Diodes		
D131,D132	223191	SD101
D171	224450512	MTZ5.1B
Resonators		
X171	3010228Y	XTL-4.5M,Crystal
X201	3010227Y	CSB456F15,Ceramic
Coils and transformers		
L101	233457Y	NFIF-4081
L102	233458Y	NFIF-4082
L103	233454M022	NCH-1452 022M
L104	233383	NMC-6070
L201,L202	233355A	NMC-4059
L151	232163	NMRF-7065
L152	232139	NMIF-4062
Ceramic filters		
X101,X102	3010071	SFE10.7MA5
X103	3010130	SFE10.7MZ2A
X151	3010123	SFZ-450JL
Capacitors		
C001	354741019	100 $\mu$ F,16V,Elect.
C107-C109	354780229	2.2 $\mu$ F,50V,Elect.
C110,C171	354741019	100 $\mu$ F,16V,Elect.
C132	354742209	22 $\mu$ F,16V,Elect.
C133	354784799	0.47 $\mu$ F,50V,Elect.
C151	354741009	10 $\mu$ F,16V,Elect.
C155,C156	354741009	10 $\mu$ F,16V,Elect.
C157	374723324	3300pF $\pm$ 5%,50V,Plastic
C158	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
C159,C180	354721019	100 $\mu$ F,6.3V,Elect.
C174	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
C175	354780229	2.2 $\mu$ F,50V,Elect.
C176	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C177	354782299	0.22 $\mu$ F,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C201,C202	354780109	1 $\mu$ F,50V,Elect.
C203	354783399	0.33 $\mu$ F,50V,Elect.
C204	354741019	100 $\mu$ F,16V,Elect.
C205,C206	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
C213-C216	354741009	10 $\mu$ F,16V,Elect.
C217	354780229	2.2 $\mu$ F,50V,Elect.
Resistors		
R101	5210263	N06HR 20KBC,Trim
R202	5210259	N06HR2KBC,Trim
Terminal		
P101	25060117	NTM-2PDML051
Socket		
P211b	25050986	NSCT-14P773
VOLUME CIRCUIT PC BOARD (NAAF-4899-3)		
CIRCUIT NO.	PART NO.	DESCRIPTION
R431,R432	5104334Y	N16RGL100KBT25F,Variable,Volume
P613b	25050985	NSCT-12P772,Socket

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4900-3A)

CIRCUIT NO.	PART NO.	DESCRIPTION
Transistors		
Q951	221282 or	DTC144ES or
	2213560	RN1204
Q952	2213650 or	DTD113ZS or
	2214680	RN1226
Diodes		
D951-D954	22380035 or	GP104003E or
	22380046	AM01Z
D955	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
Capacitors		
C901	3500065A	$\Delta$ DE7150FZ103PAC400V/125V
C952	354742219	220 $\mu$ F,16V,Elect.
Resistor		
R951	453530824	8.2 ohm,1/2W,Metal
Power transformer		
T902	2300671	$\Delta$ NPT-1111P
Relay		
RL901	25065483	$\Delta$ NRL-1P5A-DC-12-084
Fuses		
F902	252076	$\Delta$ 3.15A-SE-EAK
F903	252075	$\Delta$ 2.5A-SE-EAK
Fuseholders		
F902a,F903a	25050065	$\Delta$ YSH403T
Socket		
P902	25050410	$\Delta$ NSCT-2P235,AC outlet

VIDEO CIRCUIT PC BOARD (NAETC-4901-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q253	222840661	4066B
Transistors		
Q251,Q252	2213284 or	2SC1740S-R or
	2212115	2SC2458-GR
Diode		
D251	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
Capacitors		
C251,C252	354721019	100 $\mu$ F,6.3V,Elect.
C255,C256	354724719	470 $\mu$ F,6.3V,Elect.
C257	354721019	100 $\mu$ F,6.3V,Elect.
C259	354741019	100 $\mu$ F,16V,Elect.
Terminal		
P251	25045339	NPJ-4PDYE190

RI TERMINAL PC BOARD(NAETC-4904-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
Terminal		
P961	25045330	NPJ-2PDBL184

HEADPHONE TERMINAL PC BOARD(NASW-4905-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
Terminal		
P503	25045255	YKB21-5009

LOUDNESS SWITCH PC BOARD(NASW-4906-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
Socket		
S714	25035652	NPS-111-S604

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

## PRINTED CIRCUIT BOARD-PARTS LIST

## TX-SV9030

## MAIN CIRCUIT PC BOARD (NAAR-4892-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs			Transistors	
Q301	222502	NJM4558D-X	Q581,Q582	2211732 or	2SC1845-F or
Q302	22240280	LC7821N		2211733	2SC1845-E
Q303,Q403	22240025	LC4966	Q583	2211792 or	2SA992-F or
Q401,Q402	22240247	BA15218N		2211793	2SA992-E
Q481	22240239	TA7291S	Q591-Q593	2213640 or	DTC123JS or
Q571	22240752	NJM4556L		2214660	RN1205
Q921	222780125NEC	78M12HF	Q924	2211455	2SA1015-GR
Q922	222790125	79M12HF		Diodes	
Q923	222780565JRC	78M56	D505,D506	223222,	WG713A,
	Transistors		D571,D572	223205 or	1SS270A or
Q304,Q404	2213510 or	DTA114ES or	D591,D592	223163	1SS133
Q493	2214350	RN2202	D911	22380038	RBV602
Q305,Q405	221282 or	DTC144ES or	D925	22380048	RBA402
Q572	2213560	RN1204	D926-D928	22380035 or	GP104003E or
Q491,Q492	2213631 or	RN1241-A or		22380046	AM01Z
Q575,Q576	2213632	RN1241-B	D929	224453304	MTZ33D
Q501-Q504	2211732 or	* 2SC1845-F or	D930,D931	223222,	WG713A,
Q507,Q508	2211733	* 2SC1845-E		223205 or	1SS270A or
Q505,Q506	2213354 or	2SA933S-R or		223163	1SS133
	2212125	2SA1048-GR		Coils	
Q509,Q510	2213284 or	2SC1740S-R or	L501,L502	231176S	S-1.3C
Q515,Q516	2212115	2SC2458-GR		Capacitors	
Q511,Q512	2211353 or	2SA949-O or	C303,C304	354741009	10 $\mu$ F,16V,Elect.
	2211354	2SA949-Y	C307,C308	354721019	100 $\mu$ F,6.3V,Elect.
Q513,Q514	2211633 or	2SC2229-O or	C309,C310	374726224	6200pF $\pm$ 5%,50V,Plastic
	2211634	2SC2229-Y	C311,C312	374721824	1800pF $\pm$ 5%,50V,Plastic
Q517,Q518	2201944,	* 2SD1763-D,	C313-C316	354741009	10 $\mu$ F,16V,Elect.
	2201945 or	* 2SD1763-E or	C391,C392	374721015	100pF $\pm$ 10%,50V,Plastic
	2201946	* 2SD1763-F	C401,C402	354741009	10 $\mu$ F,16V,Elect.
Q519,Q520	2201934,	* 2SB1186-D,	C407-C412	354741009	10 $\mu$ F,16V,Elect.
	2201935 or	* 2SB1186-E or	C413,C414	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
	2201936	* 2SB1186-F	C417,C418	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
Q521,Q522	2202523,	* 2SC4468-O,	C421,C422	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
	2202524,	* 2SC4468-Y,	C481	354721019	100 $\mu$ F,6.3V,Elect.
	2202526,	* 2SC4468-P,	C491	354741009	10 $\mu$ F,16V,Elect.
	2202292 or	* 2SC3182N-R or	C501,C502	354741009	10 $\mu$ F,16V,Elect.
	2202293	* 2SC3182N-O	C503,C504	374721015	100pF $\pm$ 10%,50V,Plastic
Q523,Q524	2202513,	* 2SA1695-O,	C507,C508	354742219	220 $\mu$ F,16V,Elect.
	2202514,	* 2SA1695-Y,	C513,C514	354722219	220 $\mu$ F,6.3V,Elect.
	2202516,	* 2SA1695-P,	C521,C522	354772209	22 $\mu$ F,63V,Elect.
	2202282 or	* 2SA1265N-R or	C527,C528	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
	2202283	* 2SA1265N-O	C567,C568	354700109	1 $\mu$ F,160V,Elect.
Q525,Q526	2211732 or	2SC1845-F or	C570	354771019	100 $\mu$ F,63V,Elect.
	2211733	2SC1845-E	C571-C573	354741009	10 $\mu$ F,16V,Elect.
Q573	2211163 or	2SC2120-O or	C581	354721019	100 $\mu$ F,6.3V,Elect.
	2211164	2SC2120-Y	C915,C916	3504263 or	* 8200 $\mu$ F,56V or
Q575,Q576	2213631 or	RN1241-A or		3504268	* 8200 $\mu$ F,56V,Elect.
	2213632	RN1241-B	C923	3504213	4700 $\mu$ F,35V,Elect.
			C924	354763329	3300 $\mu$ F,35V,Elect.

CAUTION:Replacement for transistor of mark \*,if necessary,  
must be made from the same beta group (H FE) as  
the original type.

## DISPLAY CIRCUIT PC BOARD (NADIS-4897-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	IC			Capacitors	
Q701	22240773Y	$\mu$ PD78042GF-064	C927,C928	354741009	10 $\mu$ F,16V,Elect.
	FL tube		C931	354741009	10 $\mu$ F,16V,Elect.
Q702	212127Y	FIP13LM8	C932	354761019	100 $\mu$ F,35V,Elect.
	Remote control sensor		C933	354781019	100 $\mu$ F,50V,Elect.
U701	24130010Y	HC-312	C936,C937	354741009	10 $\mu$ F,16V,Elect.
	Transistors			Resistors	
Q703	221282 or	DTC144ES or	R393	5104225	N11RGLC250KWT22Z, Balance
	2213560	RN1204	R409	5104230	N14RLC100KWT22Z,Bass
Q704-Q706	2213284 or	2SC1740S-R or	R415	5104230	N14RLC100KWT22Z,Treble
	2212115	2SC2458-GR	R533,R534	443522704	27 ohm,1/2W,Metal oxide
Q707	2213510 or	DTA114ES or	R535,R536	443521014	100 ohm,1/2W,Metal oxide
	2214350	RN2202	R537,R538	5210259	N06HR 2KBC,Trim
	Diodes		R543,R544	443523314	330 ohm,1/2W,Metal oxide
D701,D702	223205 or	1SS270A or	R545,R546	4000132Y	0.22 ohm $\times$ 2.5W + 5W,Metal plate
D704,D705	223163	1SS133	R551,R552	453630824	8.2 ohm,1W,Metal
D703	224450913	MTZ9.1C	R553,R554	443523924	3.9 kohm,1/2W,Metal oxide
D706,D707	224450562	MTZ5.6B	R567,R568	453530224	2.2 ohm,1/2W,Metal
D708	223205 or	1SS270A or	R570	443522204	22 ohm,1/2W,Metal oxide
D710-D712	223163	1SS133	R923	453530224	2.2 ohm,1/2W,Metal
D709	225291D	SEL4910D-D,LED	R924	453530824	8.2 ohm,1/2W,Metal
	Resonator		R927,R930	443522204	22 ohm,1/2W,Metal oxide
X701	3010163	CST4.19MGW,Ceramic	R933	443524704	47 ohm,1/2W,Metal oxide
	Coils		R934	443524704	47 ohm,1/2W,Metal oxide
L701-L703	233454K220	NCH-1452 220K		Relaies	
	Capacitors		RL591,RL592	25065485	NRL-2P2A-DC24-086
C701	3000075Y	0.047F,5.5V,Super		Plugs	
C702	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic	P211a,P613a	25055652	NPLG-14P608
C703,C709	354721019	100 $\mu$ F,6.3V,Elect.	P611a	25055678	NPLG-8P634
C704	354780109	1 $\mu$ F,50V,Elect.	P612a	25055649	NPLG-8P605
C706,C707	354780109	1 $\mu$ F,50V,Elect.		Terminals	
C711	354721019	100 $\mu$ F,6.3V,Elect.	P301-P303	25045300	NPJ-6PDBL-159
	Switches		P501	25060158	NTM-8PDMN084
S701-S713	25035652	NPS-111-S604	P504	25045302	NPJ-1PDBL-161
S715-S737	25035652	NPS-111-S604		Sockets	
	Plugs		P711a-P713a	25051046	NSCT-10P833
P711b-P713b	25055659	NPLG-10P615	JL261a	25051087	NSCT-3P874
	Holder		JL811a,JL812a	25051111	NSCT-7P898
	27190937Y	FL tube	JL912a,JL913a	25051109	NSCT-5P896
	Retainer				
	27141575Y	RI terminal			

## POWER SUPPLY CIRCUIT PC BOARD(NAETC-4893-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
F921,F922	252076	! 6.3A-SE-EAK,Fuse
F921a,F922a	25050065	! YSH403T,Fuseholders



## TUNER CIRCUIT PC BOARD (NARF-4898-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240089	FE415-G11
	ICs	
Q103	22240749Y	LA1851N
Q171	22240750Y	LC72140
	Transistors	
Q101	2210746	2SC945A-P
Q102	2211723	2SC1923-O
Q172	2212445	2SK365-GR
Q173	2213284 or	2SC1740S-R or
Q201,Q202	2212115	2SC2458-GR
Q174,Q175	2213510 or	DTA114ES or
Q205	2214350	RN2202
Q203,Q204	2212794	2SD1468-R
	Diode	
D171	224450512	MTZ5.1B
	Resonators	
X171	3010228Y	XTL-4.5M,Crystal
X201	3010227Y	CSB456F15,Ceramic
	Coils and transformers	
L101	233457Y	NFIF-4081
L102	233458Y	NFIF-4082
L103	233454M022	NCH-1452 022M
L104	233383	NMC-6070
L201,L202	233355A	NMC-4059
L151	232163	NMRF-7065
L152	232139	NMIF-4062
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5
X103	3010130	SFE10.7M22A
X151	3010123	SFZ-450JL
	Capacitors	
C001	354741019	100 $\mu$ F,16V,Elect.
C107-C109	354780229	2.2 $\mu$ F,50V,Elect.
C110	354741019	100 $\mu$ F,16V,Elect.
C133	354784799	0.47 $\mu$ F,50V,Elect.
C151	354741009	10 $\mu$ F,16V,Elect.
C155,C156	354741009	10 $\mu$ F,16V,Elect.
C157	374723324	3300pF $\pm$ 5%,50V,Plastic
C158	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic
C159,C180	354721019	100 $\mu$ F,6.3V,Elect.
C174	374723334	0.033 $\mu$ F $\pm$ 5%,50V,Plastic
C175	354780229	2.2 $\mu$ F,50V,Elect.
C176	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C177	354782299	0.22 $\mu$ F,50V,Elect.
C201,C202	354780109	1 $\mu$ F,50V,Elect.
C203	354783399	0.33 $\mu$ F,50V,Elect.
C204	354741019	100 $\mu$ F,16V,Elect.
C205,C206	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C213-C216	354741009	10 $\mu$ F,16V,Elect.
C217	354780229	2.2 $\mu$ F,50V,Elect.
	Resistors	
R101	5210263	N06HR 20KBC,Trim
R202	5210259	N06HR2KBC,Trim
	Terminal	
P101	25060117	NTM-2PDML051
	Socket	
P211b	25050986	NSCT-14P773

## POWER SUPPLY CIRCUIT PC BOARD (NAPS-4900-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q951	221282 or	DTC144ES or
	2213560	RN1204
Q952	2213650 or	DTD113ZS or
	2214680	RN1226
	Diodes	
D951-D954	22380035 or	GP104003E or
	22380046	AM01Z
D955	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
	Capacitors	
C901	3500065A	$\Delta$ DE7150FZ103PAC400V/125V
C952	354742219	220 $\mu$ F,16V,Elect.
	Resistor	
R951	453530824	8.2 ohm,1/2W,Metal
	Power transformer	
T902	2300671	$\Delta$ NPT-1111P
	Relay	
RL901	25065483	$\Delta$ NRL-1P5A-DC-12-084
	Fuses	
F902	252076	$\Delta$ 3.15A-SE-EAK
F903	252075	$\Delta$ 2.5A-SE-EAK
	Fuseholders	
F902a,F903a	25050065	$\Delta$ YSH403T
	Socket	
P902	25051125	$\Delta$ NSCT-4P912,AC outlet

## VIDEO CIRCUIT PC BOARD (NAETC-4901-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q253	222840661	4066B
	Transistors	
Q251,Q252	2213284 or	2SC1740S-R or
	2212115	2SC2458-GR
	Diode	
D251	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
	Capacitors	
C251,C252	354721019	100 $\mu$ F,6.3V,Elect.
C255,C256	354724719	470 $\mu$ F,6.3V,Elect.
C257	354721019	100 $\mu$ F,6.3V,Elect.
C259	354741019	100 $\mu$ F,16V,Elect.
	Terminal	
P251	25045339	NPJ-4PDYE190

## RI TERMINAL PC BOARD (NAETC-4904-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P961	25045330	NPJ-2PDBL184

## HEADPHONE TERMINAL PC BOARD (NASW-4905-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P503	25045255	YKB21-5009

## LOUDNESS SWITCH PC BOARD (NASW-4906-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S714	25035652	NPS-111-S604

## SURROUND CIRCUIT PC BOARD (NAAF-4908-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q601	22240247 or	BA15218N or
Q673,Q674	22240293	NJM4558L-D
Q602	22240683 or	NJM2177L or
	22240692	M69032P
Q606	22240398 or	TC9162N or
	22240751	NJU7311L
Q651	22240686 or	M65830P or
	22240687	NJU9701D
Q671	22240266	TC9213P
	Transistors	
Q603,Q604	2213631 or	RN1241-A or
Q675,Q676	2213632	RN1241-B

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D651	224450562	MTZ5.6B
D652,D653	223222,	WG713A,
	223205 or	1SS270A or
	223163	1SS133
	Resonator	
X651	3010217	CST2.04MG040,Ceramic
	Capacitors	
C601,C602	354780229	2.2 $\mu$ F,50V,Elect.
C605,C606	354741009	10 $\mu$ F,16V,Elect.
C607-C610	354781099	0.1 $\mu$ F,50V,Elect.
C613,C614	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
C615,C616	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic
C617-C620	354781099	0.1 $\mu$ F,50V,Elect.
C621,C622	354780479	4.7 $\mu$ F,50V,Elect.
C623-C627	354782299	0.22 $\mu$ F,50V,Elect.
C628	354741009	10 $\mu$ F,16V,Elect.
C629	354786899	0.68 $\mu$ F,50V,Elect.
C630	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
C631,C660	374725625	5600pF $\pm$ 5%,50V,Plastic
C632	354780229	2.2 $\mu$ F,50V,Elect.
C634	354722219	220 $\mu$ F,6.3V,Elect.
C635	354741019	100 $\mu$ F,16V,Elect.
C636-C641	354741009	10 $\mu$ F,16V,Elect.
C642	374724724	4700pF $\pm$ 5%,50V,Plastic
C643	354741009	10 $\mu$ F,16V,Elect.
C644	392841007	10 $\mu$ F,16V,Elect.
C651	354782299	0.22 $\mu$ F,50V,Elect.
C653	374723924	3900pF $\pm$ 5%,50V,Plastic
C655	374726834	0.068 $\mu$ F $\pm$ 5%,50V,Plastic
C656	354744709	47 $\mu$ F,16V,Elect.
C657,C658	354781099	0.1 $\mu$ F,50V,Elect.
C659	374726834	0.068 $\mu$ F $\pm$ 5%,50V,Plastic
C661	374724724	4700pF $\pm$ 5%,50V,Plastic
C663,C665	354721019	100 $\mu$ F,6.3V,Elect.
C666	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
	CIRCUIT NO.	PART NO.
		DESCRIPTION
		Capacitors
C671,C672	354780229	2.2 $\mu$ F,50V,Elect.
C675,C676	354741009	10 $\mu$ F,16V,Elect.
C677,C678	354780229	2.2 $\mu$ F,50V,Elect.
C679-C682	354741009	10 $\mu$ F,16V,Elect.
C684,C685	354741009	10 $\mu$ F,16V,Elect.
	Resistor	
R431	5104332Y	N16RQL100KBT25F,Main volume
	Plug	
P622a	25055405	NPLG-3P387
	Sockets	
P611b	25051127	NSCT-8P914
P612b	25050983	NSCT-8P770

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

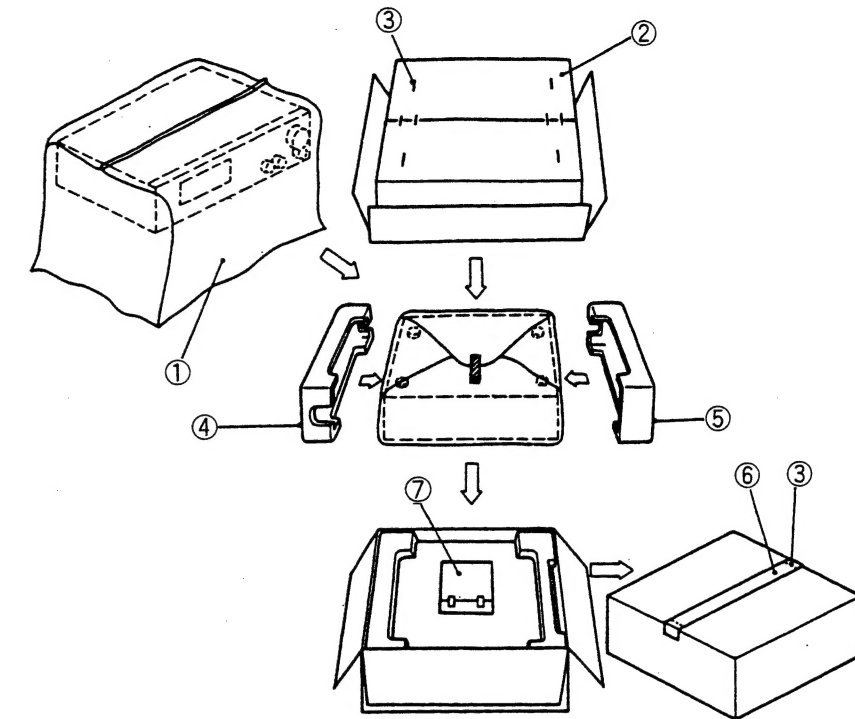
## PACKING VIEW

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P613b	25050986	NSCT-14P773
P621a	2000802ULY	NSAS-6P758

## CENTER AND REAR AMPLIFIER PC BOARD (NAAF-4909-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q801-Q804	2211732 or	* 2SC1845-F or
Q807,Q808	2211733	* 2SC1845-E
Q805,Q806	2213354 or	2SA933S-R or
	2212125	2SA1048-GR
Q809,Q810	2213284 or	2SC1740S-R or
Q815,Q816	2212115	2SC2458-GR
Q811,Q812	2211353 or	2SA949-O or
	2211354	2SA949-Y
Q813	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
Q814	2211732 or	2SC1845-F or
Q825,Q826	2211733	2SC1845-E
Q817	2212653 or	2SC3421-O or
	2212654	2SC3421-Y
Q818	2211653 or	2SC2235-O or
	2211654	2SC2235-Y
Q819	2212643 or	2SA1538-O or
	2212644	2SA1538-Y
Q820	2211643 or	2SA965-O or
	2211644	2SA965-Y
Q821	2202253,	* 2SC4467-O,
	2202254,	* 2SC4467-Y,
	2202256,	* 2SC4467-P,
	2202502 or	* 2SC3181N-R or
	2202503	* 2SC3181N-O
Q822	2202373,	* 2SC4466-O,
	2202374,	* 2SC4466-Y,
	2202375,	* 2SC4466-P,
	2202352 or	* 2SC3180N-R or
	2202353	* 2SC3180N-O
Q823	2202243,	* 2SA1694-O,
	2202244,	* 2SA1694-Y,
	2202246,	* 2SA1694-P,
	2202492 or	* 2SA1264N-R or
	2202493	* 2SA1264N-O
Q824	2202363,	* 2SA1693-O,
	2202364,	* 2SA1693-Y,
	2202365,	* 2SA1693-P,
	2202342 or	* 2SA1263N-R or
	2202343	* 2SA1263N-O

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D805,D806	223222,	WG713A,
D811	223205 or	1SS270A or
	223163	1SS133
	Coils	
L801,L802	231176S	S-1.3C
	Capacitors	
C801,C802	354741009	10 $\mu$ F,16V,Elect.
C807	354742219	220 $\mu$ F,16V,Elect.
C808	354744709	47 $\mu$ F,16V,Elect.
C821,C822	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
C827,C828	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
C865,C867	354700109	1 $\mu$ F,160V,Elect.
C866	354784709	47 $\mu$ F,50V,Elect.
C868,C870	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic
C869	354700109	1 $\mu$ F,160V,Elect.
	Resistors	
R833,R834	443522704	27 ohm,1/2W,Metal oxide
R835,R836	442521014	100 ohm,1/2W,Metal oxide
R837	5215044	N08HR 2KBC,Trim
R843,R844	443523314	330 ohm,1/2W,Metal oxide
R845	4000132Y	0.22 ohm $\times$ 2.5W+5W,Metal plate
R846	4000131Y	0.22 ohm $\times$ 2.2W+2W,Metal plate
R851,R852	453530824	8.2 ohm,1/2W,Metal
R853,R854	443523924	3.9 kohm,1/2W,Metal oxide
R865,R866	453530224	2.2 ohm,1/2W,Metal
R867-R870	443522204	22 ohm,1/2W,Metal oxide
	Relay	
RL801	25065485	NRL-2P2A-DC24-086
	Plugs	
P621b	25055234	NPLG-3P218
	Terminal	
P801	25060191Y	NTM-6PDML113

TX-9022RDS  
PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	29100034-1Y	Styrene bag for unit
2	29052706Y	Carton box
3	282301	Ten staples
4	29091652BY	Pad R
5	29091651BY	Pad L
6	29110071	PP tape
7	Accessory bag ass'y	
	232140	NMA-3057,AM loop antenna
	2010200	Cord RI
	3010054	UM-3,Two batteries
	24140261AY	RC-261S,Remote control transmitter
	29100097-1Y	Styrene bag for accessory
	292112Y	FM antenna
	29341902Y	Instruction manual
	29365020H	Warranty card
	29100094B	Styrene bag for warranty card
	29100097-1Y	Styrene bag for accessory

CAUTION: Replacement for transistor of mark \* if necessary, must be made from the same beta group (H FE) as the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

DESCRIPTION

Styrene bag for unit

Carton box

Ten staples

Pad R

Pad L

PP tape

NMA-3057,AM loop antenna

Cord RI

UM-3,Two batteries

RC-262S,Remote control transmitter

Styrene bag for accessory

FM antenna

Instruction manual

Warranty card

Styrene bag for warranty card